AMERICAN AGRICULTURIST

FOR THE

Farm, Garden, and Household.

"AGRICULTURE IS THE MOST HEALTHFUL, MOST USEFUL, AND MOST NOBLE EMPLOYMENT OF MAN."—WASHINGTON.

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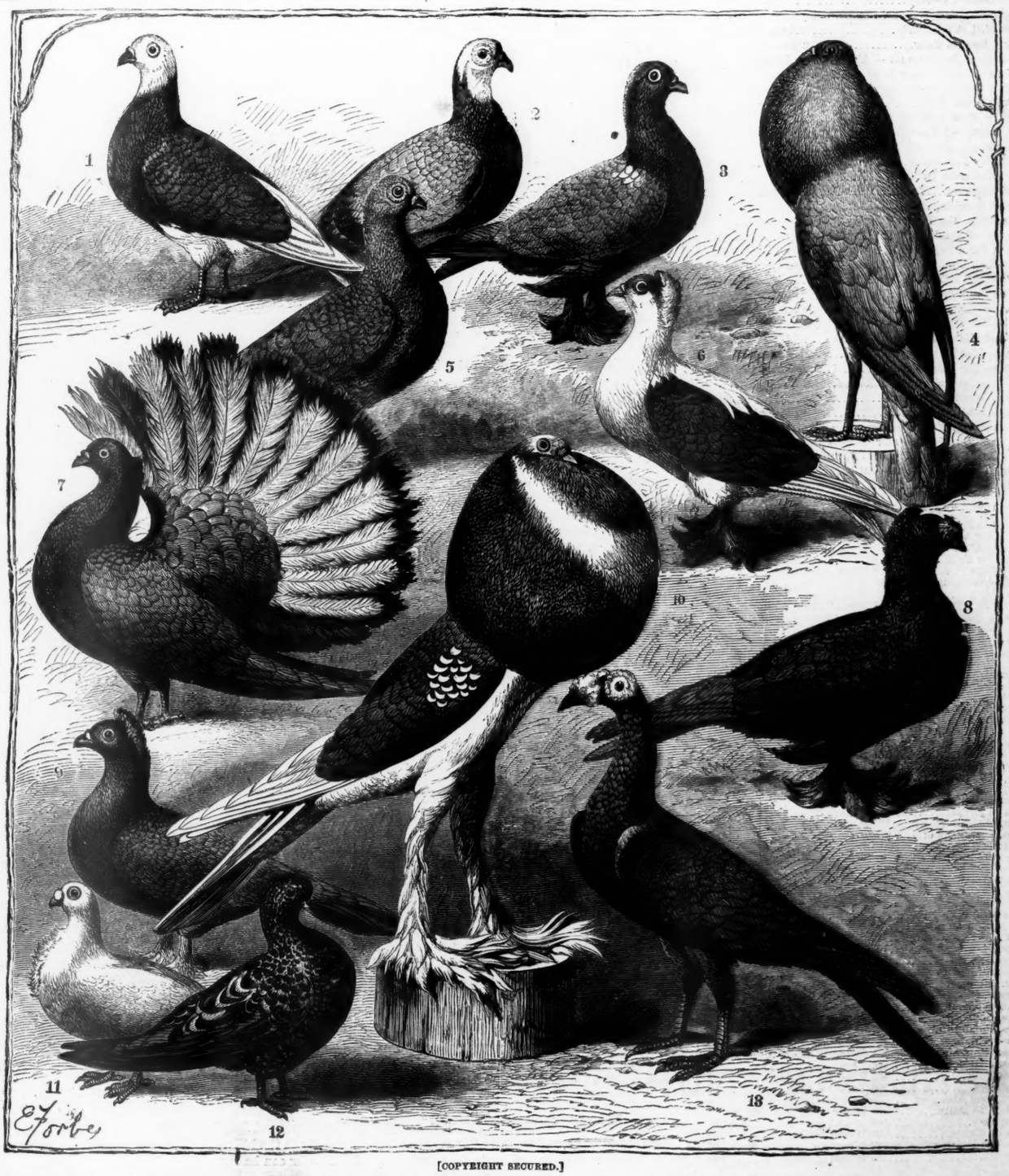

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PIGEONS AT THE SHOW OF THE NATIONAL COLUMBARIAN SOCIETY.—(*See page* 171.)

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Calendar for May.

Day of Month.	Day of Week.	Boston, N. England, N. York State, Michigan, Wisconsin, Iowa, and Oregon. Sun rises.	Sun sets.	Mo'n rises.	N. Y. City, Ct., Philadelphia, New Jersey, Penn., Ohio, Indiana, and Illinois. Sun rises.	Sun sets.	Mo'n rises.	Washington, Maryland, Virginia, Kentucky, Missouri, and California. Sun rises.	Sun sets.	Mo'n rises.
		H.M	H.M	H. M.	H.M	H.M	H. M.	H.M	H.M	H. M.
1	F	4 55	7 0	7 11	4 59	6 56	7 8	5 2	6 52	7 4
2	S	4 53	7 1	8 14	4 57	6 57	8 9	5 1	6 53	8 4
3	S	4 52	7 2	9 24	4 56	6 58	9 18	5 0	6 54	9 12
4	M	4 50	7 3	10 30	4 54	6 59	10 23	4 58	6 55	10 16
5	T	4 49	7 4	11 31	4 53	7 0	11 24	4 57	6 56	11 17
6	W	4 48	7 5	morn	4 52	7 1	morn	4 56	6 57	morn
7	T	4 47	7 6	0 23	4 51	7 2	0 16	4 55	6 58	0 9
8	F	4 46	7 7	1 3	4 50	7 3	0 57	4 54	6 59	0 51
9	S	4 45	7 8	1 42	4 49	7 4	1 37	4 53	7 0	1 32
10	S	4 44	7 9	2 9	4 48	7 5	2 5	4 52	7 1	2 2
11	M	4 43	7 10	2 34	4 47	7 6	2 32	4 51	7 2	2 30
12	T	4 42	7 11	2 57	4 46	7 7	2 57	4 50	7 3	2 56
13	W	4 41	7 12	3 23	4 45	7 8	3 24	4 49	7 4	3 25
14	T	4 40	7 13	3 49	4 44	7 9	3 51	4 48	7 5	3 54
15	F	4 39	7 14	sets	4 43	7 10	sets	4 47	7 6	sets
16	S	4 38	7 15	8 34	4 42	7 11	8 28	4 46	7 7	8 22
17	S	4 37	7 16	9 50	4 42	7 11	9 43	4 46	7 7	9 36
18	M	4 36	7 17	10 54	4 41	7 12	10 47	4 45	7 8	10 39
19	T	4 36	7 18	11 45	4 40	7 13	11 33	4 44	7 9	11 31
20	W	4 35	7 19	morn	4 40	7 14	morn	4 43	7 10	morn
21	T	4 34	7 20	0 23	4 39	7 15	0 18	4 43	7 10	0 12
22	F	4 33	7 21	0 56	4 38	7 16	0 51	4 43	7 11	0 47
23	S	4 32	7 22	1 13	4 37	7 17	1 10	4 42	7 12	1 6
24	S	4 32	7 23	1 43	4 37	7 18	1 41	4 42	7 13	1 39
25	M	4 31	7 24	2 3	4 36	7 19	2 2	4 41	7 14	2 1
26	T	4 30	7 25	2 22	4 35	7 19	2 22	4 40	7 15	2 22
27	W	4 30	7 26	2 41	4 33	7 20	2 42	4 40	7 16	2 44
28	T	4 29	7 27	3 0	4 34	7 21	3 2	4 39	7 16	3 5
29	F	4 28	7 28	3 22	4 34	7 22	3 26	4 39	7 17	3 30
30	S	4 27	7 28	3 49	4 33	7 23	3 54	4 38	7 18	3 59
31	S	4 26	7 29	4 23	4 32	7 23	4 29	4 37	7 18	4 36

PHASES OF THE MOON.

MOON.	BOSTON.	N. YORK.	WASH'N.	CHA'STON	CHICAGO.
	D. H. M.	H. M.	H. M.	H. M.	H. M.
Full M'n	1 11 25 m.	11 13 m.	11 1 m.	10 49 m.	10 19 m.
3d Quart.	9 2 29 m.	2 17 m.	2 5 m.	1 53 m.	1 23 m.
New M'n	15 5 33 ev.	5 21 ev.	5 9 ev.	4 57 ev.	4 27 ev.
1st Quart	22 10 35 ev.	10 23 ev.	10 11 ev.	9 59 ev.	9 29 ev.
Full M'n	31 2 2 m.	1 50 m.	1 38 m.	1 26 m.	0 56 m.

AMERICAN AGRICULTURIST.

NEW YORK, MAY, 1874.

May is a busy month. In fact we know of no month in the year when a farmer can not find plenty of work that ought to be done. When we speak of winter being a season of comparative leisure, we simply mean that we can, if we choose, postpone our work for a few days or weeks. On a well-managed farm there is always work that can be done to advantage. Farmers often complain that their work is never done. We would not wish it otherwise. Without honest work there can be no honest pay. He that won't work neither shall he eat. How often does a man say, "if I could only get work I should be happy." A farmer need never say this. He is never in the condition of a briefless lawyer, or a minister without a charge, or a doctor without a patient. His store never lacks customers. His factory need never be run on half time. For this let us be thankful.

On our own farm, and we presume it is so on others, it is almost impossible to get ahead of the work. The seasons are short and the weather uncertain. The land is too wet to plow this week and too dry and hard to plow the week after. We must be prompt. We must be systematic and orderly. Plows, harrows, rollers, cultivators, drills, stone-boats, crow-bars, chains, spades, forks, wagons, carts, harness, bags, pails, baskets, ropes, whippletrees, clevices, bolts, monkey-wrench, ax, hammer, nails, and a score of other things that are likely or unlikely to be wanted should be all ready for use and just where you can lay your hand on them in the dark if needed. We must be ready at any moment to change from out-door to in-door work—to plow and harrow or grind hoes and oil harness; to draw off stones, sow plaster, build fence, dig, underdrain, or to cut feed, sort potatoes, repair tools, whitewash walls, or paint implements. To do all this without loss of time, and a hundred other things connected with good farming, requires a clear head, great patience, much self-denial, untiring energy, systematic and prompt industry, and constant personal supervision.

Hints about Work.

Horses need to be well looked after at this season. Much depends on their ability to do a good day's work now. They require not only good feed, but good digestion. Neither man nor horse can work well unless he eats well, sleeps well, and digests his food. Horses suffer more from indigestion than from any other one thing. At this season we are apt to keep them too many hours in the field. We know horses that are taken out to plow at six o'clock in the morning, are brought to the stable at noon, the bits taken out of their mouths, but the harness not removed. They are given a few ears of corn, and have some long, dry hay thrown into the racks; are again taken to the field at half-past one, and kept there until half-past seven at night. The horses are tired and exhausted when brought in at noon, and before there is time for the process of digestion to commence they are again put to hard work.

Three-Horse Teams are becoming more and more common, and can not be too earnestly recommended. A man can drive three horses as easily as he can two. Where it takes the strength of one horse to draw the empty wagon, three horses have double the effective force of two horses.

Plowing is often hard work. This is especially true in striking out the first furrow. In sod land we should always put on three horses, or else strike out a light, narrow furrow. On stubble land we throw up a light furrow and then turn it back again. This plows the whole land and does not overtax the team.

When the Horses are Brought Home at Noon give them a pail of water with a pint of corn or oatmeal stirred in it. Take off the harness. Wash the shoulders. If sweaty, rub them dry with straw, curry off the mud and dry sweat, and rub them down with a brush. Then feed them, and let them eat while you are at dinner.

Better Grooming in the stable and less idle time in the field is what we aim at on our own farm.

Cut Feed, moistened with water and mixed with meal and a little bran, can be eaten more rapidly than long hay, and leaves more time for rest and digestion. We mix a bushel of cut hay, four quarts of corn-meal, and two quarts of bran together, and let the horses have all they will eat of the mixture, and give them a little long hay in the racks.

Keep the Mangers Clean and Sweet.—As soon as the horse stops eating the cut feed remove all that is left from the manger. This is very important. Give a little salt in the manger every day. The horses will not eat too much if they have it regularly.

For Chafed Shoulders wash with warm soft water and castile soap and then dress with crude petroleum. If ulcerated, wash them with carbolic soap and apply petroleum afterwards. If possible, let the horse rest a few days.

Planting Corn is the important field work of the month. Corn is not likely to be as low next year as it has been for a year or two past. We think it a good time to plant freely.

Better Cultivation is, however, more desirable than a larger area. Wet land and weeds are the great enemies of the corn crop.

Early Planting is desirable, provided the land is warm and in good order.

On Rough Land we would plant in hills 3½ or 4 feet apart. We can then cultivate both ways and clean and subdue the land with little hoeing.

On Clean, Smooth, Rich Land we think it pays to drill in the crop. When the stalks are valuable for fodder, and the land is rich enough, we are sure that drilling is more profitable than planting in hills.

Drilling has one great advantage. The work is not only done much more expeditiously and cheaply, but you can put in the seed every day as fast as the land is plowed and harrowed, and thus avoid delay from wet weather. A drill that would drop in hills so as to have the rows straight both ways would enable us to do the same thing, but we have never yet found a drill that will drop the seed exactly in the hills.

Plaster can be sown either broadcast or dropped

on the hills after planting, or dusted on the leaves of the young plants. If there is a manure attachment to your drill, it is a good plan to drop the plaster with the seed.

Mangel-wurzel should be sown as early as the land can be got in good condition. We sow in drills about 30 inches apart, with an ordinary grain drill. The land should be rich, and then 300 lbs. of good superphosphate mixed with coal-ashes and drilled in with the seed will be a great help. Sow 4 lbs. of seed per acre. Thin out the plants to 12 or 15 inches apart in the rows. If you sow by hand, soak the seed for 48 hours in rain-water, changing the water every 12 hours. Cover the seed from one to two inches deep. Roll the land before and especially after sowing the seed.

Potatoes as a rule, especially Peachblows, do best when planted early; but we have had a good crop of Flukes planted as late as the first of June. A clover sod on light loam is considered best for potatoes. If the land is dry and rich, it does not matter what the previous crop may have been. Mark the land carefully three feet apart each way, and drop one large potato or two sets in each hill. Cover two or three inches deep with a hoe. A spoonful of plaster dropped in each hill frequently has a beneficial effect. We have known it increase the crop 50 bushels per acre. If planted in drills, drop the sets 15 to 18 inches apart. We make the drills with a light steel plow, 3 feet apart for Early Rose and 3½ feet for Peachblows. Cover with a plow three or four inches deep, and as soon as the weeds begin to start, or before, harrow the land with a Thomas or other light harrow. See Hints for last month.

Beans are sown as soon as we are through planting corn. They are usually sown on a clover sod. Rows 2½ feet apart, and four or five beans in a hill 12 or 15 inches apart, or if drilled in with a grain-drill, drop the beans about two inches apart. Plow the land carefully and harrow very thoroughly, and roll before planting. Use the cultivator freely and keep the crop clean. If you can not do this do not go extensively into bean growing.

Mowing Land should be got ready for the machine. Pick off stones. Put a stake by the side of any stone that can not be removed, so that you will not run the machine against it.

Sow Plaster on clover and on dry upland meadows—say one to two bushels per acre.

Pastures are frequently injured by turning stock on to them before the grass has got a good start. Keep the stock on grass land intended for corn, potatoes, or beans until the regular pastures afford a good bite.

Young Clover, when the dew is on, is very apt to produce hoven in cattle when first turned out to pasture. The green, wet clover ferments in the stomach.

Milch-Cows will be longing for green grass before it is ready for them. We do not believe in the notion that if they once taste grass they will not eat hay afterwards. It is not true. Cut up hay, moisten it with water, sprinkle on a quart of corn-meal and a quart of bran to each bushel of the hay, and let the cows have all they will eat, night and morning. Continue this feed after the cows are turned out to pasture as long as they will eat any of it. It will pay.

Calves should be fed liberally. Nothing, of course, is so good as new milk; next fresh skimmed milk, with flaxseed tea or oil-cake tea. A little nice early-mown hay, bran, oatmeal, corn-meal, oil-cake, sliced mangels, carrots, or parsnips are all good for calves in addition to a run in a sunny, sheltered pasture.

Sheep.—Let ewes and lambs have the best of pasture, and give a daily feed of clover hay and sliced mangels if you have them. Dock and castrate the lambs when three or four weeks old. Tag the old sheep, and keep a sharp lookout for any symptoms of foot-rot. If any are affected, pare and dress the feet of the *whole* flock immediately with crude carbolic acid or a saturated solution of blue vitriol. Do the work thoroughly, and repeat in three or four days.

Swine should have rings in their noses and be turned out to pasture every day. Clover is best for them, but they will do very well on grass. Young, growing pigs should have some grain in addition to the grass. Pork is likely to be high next winter, and it will pay to feed liberally.

Work in the Horticultural Departments.

In all sections wherein gardening is carried on May will bring plenty of work. There will be the planting of the general crops, besides the numerous odd jobs of which every garden has its share. There will also be an abundance of weeds to contend with, which will give constant employment. Aim to always keep in advance of the work. If the weeds are once allowed to become established the labors of the coming season will be more than doubled. Keep the cultivators, hoes, and rakes moving rapidly. This will be all the more necessary should a long season of drouth ensue. Then, watering is impracticable, and all that can be done is to stir the soil as often as possible. Keep a record of the daily operations. It will take but a few minutes each day, and will be of much value for reference in the future. Put down the date the different crops are planted, kind of manure applied, and any other items of interest.

Orchard and Nursery.

Root-Grafts should be got out at once, setting them in rows four feet apart, and the grafts twelve inches in the rows, taking care to press the earth firmly around the lower part of them.

Planting of all fruit trees must be completed as rapidly as possible. If properly heeled-in, they can be set out a week or two after those in the nursery have started. If crops are to be raised between the rows, supply plenty of manure so that the trees will not be robbed of nutriment. In planting, have the trees set out in straight rows. Nothing looks more slip-shod than trees planted irregularly.

Trees received from the nursery should be buried root and branch for a few days if their bark is shrivelled; this will usually restore them. If the buds have started from too much heat and moisture, cut back severely before planting.

Mulch.—If orchardists would mulch their newly-planted trees as soon as set out, there would be less complaint that nurserymen send out poor stock. The mulch prevents the soil over the roots from drying, and insures a vigorous growth.

Insects.—It is not yet too late to look after the eggs of the tent-caterpillar. It will require less time to destroy them now than when they are hatched. Wild-cherry trees serve as breeding places for caterpillars, and if any are allowed to remain they too should be kept clear of them.

Seedlings should all be set out this month and the rows kept clear of weeds. Seeds should be sown at once in fine soil. Collect seeds of Maples, Elms, etc., as soon as ripe, and sow at once. Evergreen seeds require to be sheltered with latticework or brush; otherwise the sun will kill the young plants as soon as they get above ground.

Grafting should be finished this month if not completed last. It is best to set the grafts just before the leaves start, but where there are a great many to be set this can not always be done.

Fruit Garden.

Planting.—The directions given above will serve in this department as well.

Packages.—Where fruit is marketed, provide a supply of crates and baskets, and see that they are in order for immediate use and properly marked.

Cuttings of currants and gooseberries buried last fall may be set out, and after one season's growth will be fine young plants. Press the earth firmly around the cuttings.

Grape-Vines.—Be careful not to injure the buds when working among the vines. Allow only one cane to grow on newly-planted vines the first year; select the strongest, and remove the others.

Currants.—If borers have worked in the bushes, cut out all the injured portions and burn; their work will be shown by the yellow, sickly appearance of the bush. Dust the leaves with powdered white hellebore if the currant-worm appears. Mulch both the old and newly-planted bushes.

Strawberries must be set out as soon as the ground will allow. Use only strong plants from runners. Keep the beds, both old and new, clean and well mulched, to prevent weeds from growing, and to keep the berries from being soiled with earth. Cut off all runners unless plants are wanted.

Raspberries and Blackberries should have been set out last month, but if not attended to then do it as early as possible. Tie up the last year's growth to stakes or trellises, and apply a heavy mulch.

Kitchen Garden.

Such of the hardier vegetables as were sown last month will now be growing, and should be kept free from weeds, and, as soon as large enough, thinned. In most localities, all the varieties of vegetables, except perhaps tomatoes and egg-plants, may be planted in the open ground now.

Asparagus.—Do not cut until the plants are two years old, and if they can be left until three all the better for the future of the bed. Set new beds now.

Beans.—Do not plant until all danger from frost is over; then plant in rows three feet apart. Limas started on sods under glass may be set out when cool nights are over; and when the ground becomes dry and warm seeds may be put in.

Beets.—Thin out the early plantings and keep carefully hoed; the thinnings make greens, preferred by many to spinach. Plant for a succession.

Cabbages, Broccoli, Cauliflower, etc., all need the same general treatment when young. Set out early plants from the hot-bed or frame, and keep well hoed. Sow for late crops in the open ground.

Carrots.—Sow the main crop when the soil is warm, and keep clean from the start, or the weeds will soon exceed the carrots in size, and the crop be injured.

Celery.—Sow seeds, if not already done, in open ground.

Corn.—Plant as soon as all danger of frost is over in drills 3½ to 4 feet apart. Plant every week or ten days for a succession.

Cucumbers.—Plants started on pieces of sod may be set in the open ground and covered at night with frame or even a paper to prevent their becoming chilled. Sow seeds in open ground as soon as warm, and dust the plants when up with plaster or ashes to prevent the "bugs" from working on them.

Egg-Plants.—Do not set out until cool nights are over and the ground becomes thoroughly warmed; then set in rich soil two feet apart each way.

Lettuce.—Keep the soil around early-set plants loose and free from weeds. Set out new beds and sow seed for a later crop.

Melons require the same treatment as cucumbers. When growing well, give liquid manure once or twice a week.

Onions should have been sown last month to insure a good crop. Weed as soon as up and keep the soil stirred often. Ashes worked in between the rows, and worked in with a hoe, and a dressing of salt are beneficial.

Parsley.—Soak the seed in warm water and sow in open ground, patting down the earth well.

Peas.—Bush before they fall over. Earth up a little when hoeing. Plant late sorts in rows four to five inches deep, so that they will not dry out during warm weather.

Potatoes.—Finish planting for general crop, and hoe the early sorts as soon as up. Just before the potatoes appear above ground draw a harrow over the rows; this will destroy numerous weeds.

Radishes.—Sow every week for a succession, and keep clear of weeds.

Parsnips.—The earlier these are sown the better the crop is likely to be. Use only last year's seed. Hoe and weed as soon as the plants appear.

Rhubarb.—Do not gather from plants set last year. Cut off all flower-stalks as soon as they appear.

Squashes for late use should be planted by the middle of the month in rich soil. Treat the early sorts the same as cucumbers.

Tomatoes.—Transplant as soon as warm enough to the open ground, setting the plants 4 feet apart.

Turnips.—Dust air-slaked lime or ashes on the young plants as soon as up to destroy the black fly which attacks them.

Flower Garden and Lawn.

Planting will form the main work in this department for the first part of this month. Evergreens succeed best when planted some time during this month. Great care must be used not to allow the roots to dry by exposure to the winds, as when this happens the tree seldom survives. Set out ornamental trees at once before they commence their growth. If any trees need moving attend to it at once.

Lawns.—Clear up all dead leaves, sticks, etc., if not done before. The lawn should be cut often in order to keep the surface neat and smooth. If the grass is not too thick allow it to remain on the ground; it will serve as a fertilizer, and also prevent the sun from drying out the roots.

Shrubs.—A selection of early flowering shrubs will give a place an attractive appearance in spring before the leaves have started on the ornamental trees. Shrubs flower better if properly pruned.

Edgings around walks and beds should be kept neatly cut, and no grass or weeds allowed to grow on the paths.

Paths.—If any new paths or drives are needed make at once, and use plenty of broken stone as a foundation, and finish with gravel.

Annuals.—Sow as soon as the ground becomes warm—at least by the middle of the month. Keep the beds clear of weeds.

Perennials should be sown in a separate bed from the annuals. Sow seed of those now coming into flower as soon as ripe.

Bulbs.—Set out Gladiolus, Tiger-flower, and Lily bulbs in rich soil. Tuberoses do best if planted in pots and started in the house before setting out.

Climbers.—Sow seeds of Sweet-pea, Cypress-vine, Morning Glory, etc., where a screen is needed and for covering trellises.

Dahlias started in the house may be planted out now, and as soon as they commence their growth they must be tied to stakes.

Greenhouse and Window Plants.

Do not put all the greenhouse plants out of doors, as is sometimes done, but keep the house looking well the year round. This can easily be done if a little pains is taken with shading.

Shelter.—Some shelter is needed for Camellias and other greenhouse evergreens when they are placed out of doors during the summer. The best thing is a sheltered spot surrounded by trees, but not under their drip, and the ground where the pots are to be placed covered with coal ashes to keep out worms. Florists use a lattice-work shed built for the purpose.

Plunging is sometimes resorted to with plants which it is not expedient to turn out of the pot, and also when it is desirous to use greenhouse plants for decorating the lawn. Such plants as Palms, Yuccas, Ficus, and other subtropical things, may be used for this purpose with fine effect.

Bedding Plants.—Do not set out until settled warm weather, and then in good soil, and give water until the plants are well established.

Summer Propagation may be carried on in a cool greenhouse kept shaded during the middle of the day.

Commercial Matters—Market Prices.

The following condensed, comprehensive tables, carefully prepared specially for the *American Agriculturist*, from our daily record during the year, show at a glance the transactions for the month ending April 13th, 1874, and for the corresponding month last year:

1. TRANSACTIONS AT THE NEW YORK MARKETS.

RECEIPTS.	*Flour.*	*Wheat.*	*Corn.*	*Rye.*	*Barley.*	*Oats.*
24 d's *this* m'th	296,000	1,317,000	2,673,000	6,900	131,000	794,000
24 d's *last* m'th	317,000	1,912,000	411,000	141,000	153,000	486,000

SALES.	*Flour.*	*Wheat.*	*Corn.*	*Rye.*	*Barley.*	*Oats.*
24 d's *this* m'th	258,000	2,101,000	2,316,000	59,000	239,000	1,097,000
24 d's *last* m'th	239,000	2,419,000	1,617,000	116,000	329,000	1,104,000

2. *Comparison with same period at this time last year.*

RECEIPTS.	*Flour.*	*Wheat.*	*Corn.*	*Rye.*	*Barley.*	*Oats.*
24 days 1874	296,000	1,317,000	2,673,000	6,900	131,000	794,000
25 days 1873	191,000	267,000	381,000	2,750	59,000	643,000

SALES.	*Flour.*	*Wheat.*	*Corn.*	*Rye.*	*Barley.*	*Oats.*
24 days 1874	258,000	2,104,000	2,316,000	59,000	239,000	1,097,000
25 days 1873	225,000	687,000	1,395,000	4,500	187,000	1,115,000

3. *Stock of grain in store at New York.*

	Wheat. bush.	*Corn.* bush.	*Rye.* bush.	*Barley.* bush.	*Oats.* bush.	*Malt.* bush.
April 6, 1874	1,036,093	128,692	20,879	118,820	468,673	45,475
Mar. 9, 1874	1,320,813	754,511	26,378	61,416	751,375	22,276
Feb. 9, 1874	1,070,649	511,800	14,668	40,906	735,992	23,769
Jan. 12, 1874	1,235,418	1,146,202	1,131	186,208	514,117	37,482
Dec. 10, 1873	1,553,313	2,093,544	——	244,885	579,733	60,865

4. *Exports from New York, Jan. 1 to April 9:*

	Flour. bbls.	*Wheat.* bush.	*Corn.* bush.	*Rye.* bush.	*Barley.* bush.	*Oats.* bush.	*Peas.* bush.
1874	612,380	7,330,021	3,018,820	234,310	——	39,581	69,162
1873	296,843	1,000,712	3,182,533	1,001	11,830	6,162	18,280
1872	217,804	1,873,515	3,579,949	179,320	——	8,750	67,817

CURRENT WHOLESALE PRICES.

	March 13.	April 11.
PRICE OF GOLD	112	113⅝
FLOUR—Super to Extra State	$5 65 @ 7 65	$5 85 @ 7 75
Super to Extra Southern	6 50 @10 50	6 50 @10 75
Extra Western	6 35 @10 75	6 35 @10 50
Extra Genesee	7 75 @ 9 50	7 85 @ 9 50
Superfine Western	5 65 @ 6 25	5 85 @ 6 45
RYE FLOUR	4 75 @ 5 75	4 75 @ 5 85
CORN-MEAL	3 50 @ 4 50	3 75 @ 4 50
BUCKWHEAT FLOUR, ₱ 100 lbs.	3 00 @ 3 50	Nominal.
WHEAT—All kinds of White	1 65 @ 1 95	1 65 @ 1 90
All kinds of Red and Amber	1 35 @ 1 75	1 40 @ 1 75
CORN—Yellow	88 @ 91	88 @ 94
Mixed	86 @ 92	81 @ 94
White	88 @ 91	86 @ 92
OATS—Western	62 @ 66¼	62 @ 66¼
State	62 @ 66	62 @ 66
RYE	1 00 @ 1 65	1 05 @ 1 12
BARLEY	1 70 @ 2 10	1 50 @ 1 95
HAY—Bale, ₱ 100 lbs	1 00 @ 1 35	1 00 @ 1 40
STRAW, ₱ 100 lbs	60 @ 95	60 @ 95
COTTON—Middlings, ₱ lb	16¾@ 16¾	17 @ 17⅜
HOPS—Crop of 1873, ₱ lb	30 @ 45	15 @ 35
FEATHERS—Live Geese, ₱ lb	65 @ 75	65 @ 75
SEED—Clover, ₱ lb	9¾@ 9¾	9¾@ 10½
Timothy, ₱ bushel	3 15 @ 3 30	— @ 3 00
Flax, ₱ bushel	2 50 @ 2 70	2 70 @ 2 80
SUGAR—Refi'g & Grocery ₱ lb	6¼@ 8¾	6¾@ 8¾
MOLASSES, Cuba, ₱ gal	20 @ 40	32 @ 48
New Orleans, ₱ gal	60 @ 75	60 @ 75
COFFEE—Rio (Gold)	23½@ 26¾	19 @ 19¾
TOBACCO, Kentucky, &c., ₱ lb	5½@ 14	5 @ 13
Seed Leaf, ₱ lb	5 @ 65	5 @ 65
WOOL—Domestic Fleece, ₱ lb	32 @ 65	30 @ 60
Domestic, pulled, ₱ lb	30 @ 55	25 @ 50
California, clip	18 @ 37	16 @ 35
TALLOW, ₱ lb	7¼@ 7¾	7⅜@ 7¾
OIL-CAKE—₱ ton	43 00 @41 00	44 00 @45 00
PORK—Mess, ₱ barrel	— @16 00	17 00 @17 12½
Prime, ₱ barrel	13 50 @13 75	14 00 @14 50
BEEF—Plain mess	10 00 @11 50	9 50 @11 00
LARD, in trcs. & barrels, ₱ lb.	8¾@ 9¼	9½@ 10¼
BUTTER—State, ₱ lb	32 @ 55	27 @ 35
Western, ₱ lb	30 @ 42	20 @ 33
CHEESE	5 @ 17¼	5 @ 17
BEANS—₱ bushel	1 50 @ 4 00	1 50 @ 4 25
PEAS—Canada, free, ₱ bu	1 20 @ 1 25	1 25 @ 1 27
EGGS—Fresh, ₱ dozen	18 @ 22	13½@ 16
" Limed ₱ dozen	11 @ 14	Nominal.
POULTRY—Fowls	10 @ 17	10 @ 19
Turkeys—₱ lb	8 @ 16	10 @ 18
Geese, ₱ pair	1 37 @ 2 50	1 75 @ 3 00
Ducks, ₱ pair	50 @ 90	72 @ 1 25
" ₱ lb	12 @ 17	12 @ 24
Ducks, wild, ₱ pair	— @ —	30 @ 1 75
PLOVER, ₱ dozen	— @ —	1 00 @ 1 25
SNIPE, ₱ dozen	— @ —	1 50 @ 1 75
CAPONS, ₱ lb	— @ —	35 @ —
PIGEONS, ₱ dozen	— @ —	2 50 @ 3 00
TURNIPS ₱ bbl	50 @ 75	50 @ 75
CABBAGES—₱ 100	2 00 @10 00	4 00 @ 8 00
ONIONS—₱ bbl	4 50 @ 5 50	3 00 @ 6 50
POTATOES—₱ bbl	2 25 @ 3 25	2 25 @ 3 12½
SWEET POTATOES—₱ bbl	4 50 @ 6 75	7 00 @ 7 50
CARROTS—₱ bbl	1 50 @ 2 00	2 00 @ 2 50
BROOM-CORN	6 @ 11	6 @ 11
STRAWBERRIES—₱ quart	— @ —	30 @ 90
APPLES—₱ barrel	1 50 @ 5 00	1 50 @ 6 00
CRANBERRIES—₱ bbl	11 50 @14 50	11 00 @15 00
BEETS, ₱ bbl	2 00 @ 2 25	2 00 @ 2 25
CELERY, ₱ doz	1 00 @ 1 50	2 00 @ 2 50
GREEN PEAS, ₱ bushel	1 60 @ 1 75	1 50 @ 1 75
WATER-CRESSES, ₱ basket	— @ —	40 @ 75
RHUBARB—₱ bunch	— @ —	12 @ —
RADISHES—₱ 100 bunches	— @ —	3 00 @ 3 50
MAPLE SUGAR	— @ —	8 @ 15
GINSENG	— @ —	1 25 @ 1 35

Gold has been up to 113⅞ and down to 112—closing April 11th at 113⅝ as against 112 on March 12th..... The receipts and sales of Breadstuffs have been on an extensive scale for the season. The arrivals of Corn have been unusually heavy. The demand for Flour, Spring Wheat, and Corn has been active, largely for export. Prices have been variable, closing generally with more firmness. The dealings in Oats have been quite liberal, and the market closed strong; prime samples of both Mixed and White, scarce, and wanted for trade purposes. Rye has been in better request, and much firmer toward the close. Barley has been plenty, and seriously depressed in price, with less inquiry for supplies. Spring Wheat and Mixed Corn has been sold to a considerable extent for forward delivery at the ruling figures. There has not been much call for Wheat, millers having been the principal buyers, and purchasing only to meet urgent wants. The rise in ocean freights toward the close tended to check operations on export account. .....Provisions have been more active, the transactions in Pork, Lard, and Bacon having been largely on speculative account at firmer rates. Beef easier; Butter and Eggs much cheaper; Cheese about steady.....There has been a fair movement in Cotton for prompt and forward delivery, closing, however, in favor of buyers..... Tobacco, Seeds, Hay, and Straw have been moderately sought after within our revised range.....Wool has been in fair demand, and though somewhat irregular during the month closed rather stronger, with very scant supplies of really desirable grades available. From California the reports are that shearing is now quite general, and that the San Francisco market will be quite liberally supplied in the course of a few weeks. A lot of 48 bales new Spring Clip has been sold in San Francisco at 25c., gold. The Wool was from Santa Cruz Island, light condition with few burs. According to recent advices, fully a fourth part of the sheep in Northern California has been lost, which loss, however, will probably be made up by the increase of the clip in Southern California, so that the quantity of Wool raised in 1874 will doubtless about equal the clip of 1873.....Hops have declined materially, on a very dull market..... ..In most other articles trade has been without notable activity.

New York Live-Stock Markets.

RECEIPTS.

WEEK ENDING	*Beeves.*	*Cows.*	*Calves.*	*Sheep.*	*Swine.*	*Tot'l.*
March 23	7,893	99	715	16,742	25,065	50,514
March 30	8,227	260	835	16,755	29,820	55,897
April 6	9,374	100	1,260	14,078	33,576	58,388
April 13	7,517	80	1,990	19,205	37,631	66,423
Total for 4 Weeks	33,011	539	4,800	66,780	126,092	231,222
do. *for prev.* 5 *Weeks*	33,753	274	3,111	98,766	143,093	279,817

	Beeves.	*Cows.*	*Calves.*	*Sheep.*	*Swine.*
Average per Week	8,253	134	1,200	16,695	31,523
do. do. *last Month*	6,995	55	622	19,753	24,619
do. do. *prev's Month*	8,238	47	606	24,080	31,322

Beef Cattle.—The regularly increasing supply of cattle has to some extent prevented an advance in prices that the good demand might have warranted. At the close of last month an increase of over 1,000 head per week broke the market, which remained dull until the still further increased receipts at the beginning of April reduced prices fully ¼c. ₱ lb. Prices are yet too high for liberal consumption, and the market is sustained only by the unexpectedly good demand. Trade has been active during the month since our last report, and as we close we have to note a falling off in the demand and a shrinkage in prices, extra beeves selling at 12¾c. @ 13c. to dress 60 lbs. ₱ cwt.; steers and oxen bringing 10c. @ 12½c. to dress 56 to 58 lbs.; and rough cattle, dressing 55 lbs., selling at 9½c. ₱ lb.

The prices for the past four weeks were as follows:

WEEK ENDING	*Range.*	*Large Sales.*	*Aver.*
March 22	9¼@13 c.	11 @11½c.	11¼c.
March 29	9 @13¼c.	10¾@11¾c.	11¼c.
April 6	8½@13¼c.	10¾@11½c.	11 c.
April 13	8½@13 c.	10¾@11¼c.	10¾c.

Milch Cows.—The demand has been steady, with a fair promise of advanced prices; but the heavy receipts of March 29 were too much for the trade to dispose of without a reduction, and prices were marked down $5.00 per head. At the close the market was tame, with a little better feeling, the range being from $40 to $80 for cow and calf.....**Calves.**—The receipts of this stock have been steadily increasing, but the demand has been steady also, and prices remain firm at 8c. @ 10c. ₱ lb. for veals and 11c. @ 14c. ₱ lb. for hog-dressed.....**Sheep and Lambs.**—After a week or two of dullness, the market has fully recovered its tone, and sellers ask full prices, without, however, raising quotations. Buyers can get no reductions, and sales are about equal to supply. Unshorn sheep sold at the close at 7¼c. @ 9¼c. ₱ lb., and spring lambs of poor quality brought $6.50 @ $8.00 ₱ head.....**Swine.**—The market for live hogs has been practically dead; there have been no offerings for many days, and those offered early in April were not good. Thin Ohio hogs averaging 121 lbs. brought 5c. ₱ lb., and good hogs would bring 6c. Dressed hogs have been easy throughout, and the quotations as we close are 7⅛c. @ 7½c. ₱ lb., with 7½c. as the ruling price.

As to Breeding Sows.—"D. L. G.," Honey Creek, Mo. Although it is stated by some writers upon "the pig" that if a sow is not brought to the boar when her pigs are two or three days old she will not breed again until the pigs are weaned, that is not always the case. On the contrary, sows are sometimes brought to breed when their pigs are four weeks old, as in your case, but more frequently they are not. If the sow is allowed plenty of exercise, and is well fed, she will less often fail to breed than when kept up in a pen. No directions can be given for spaying sows. The operation must be learned by practice only.

DO YOU WANT ONE OF THE VALUABLE PREMIUMS?

TWO MONTHS MORE.

May and June are the two months remaining, during which *any* person who wishes to obtain one or more of the useful and valuable articles offered in our Premium List (of which a copy will be sent free to any applicant, see page 199) can easily get them. This has already been done by more than 14,000 persons, who during years past have tried with success the raising of Clubs of Subscribers for our papers, and availed themselves of the liberal offers of Premiums made by the Publishers.

We invite **all** our Subscribers to take hold of this work and secure a Premium while the offer is open. Specimen copies of both papers will be sent to any wishing to show them for this purpose.

containing a great variety of Items, including many good Hints and Suggestions which we throw into smaller type and condensed form, for want of space elsewhere.

Remitting Money: — Checks on New York City Banks or Bankers are best for large sums; make payable to the order of **Orange Judd Company. Post-Office Money Orders** for $50 or less, are cheap and safe also. When these are not obtainable, **register** letters, affixing stamps for postage and registry; put in the money and seal the letter in the presence of the postmaster, and *take his receipt for it.* Money sent in the above three methods is safe against loss.

Postage: On *American Agriculturist*, 12 cents a year, and on *Hearth and Home*, 20 cents a year, in advance. Double rates if not paid in advance at the office where the papers are received. For subscribers in British America, the postage, as above, must be sent to this office, *with the subscription*, for prepayment here. Also 20 cents for delivery of *Hearth and Home* and 12 cents for delivery of *American Agriculturist* in New York City.

Bound Copies of Volume Thirty-two are now ready. Price, $2, at our office; or $2.50 each, if sent by mail. Any of the last seventeen volumes (16 to 32) will also be forwarded at same price. Sets of numbers sent to our office will be neatly bound in our regular style, at 75 cents per vol. (50 cents extra, if returned by mail.) Missing numbers supplied at 12 cents each.

Clubs can at any time be increased by remitting for each addition the price paid by the original members: or a small club may be increased to a larger one; thus; a person having sent 10 subscribers and $12 may afterward send 10 more subscribers with only $8; making a club of 20 at $1 each; and so of the other club rates.

The German Agriculturist is published at the same price as the English edition, and is mainly a reproduction of that paper, with a special department edited by the Hon. F. Münch. Will our readers kindly mention this to their German friends? Perhaps some who employ Germans as gardeners, laborers, etc., would be glad to supply them with useful reading matter by subscribing for the German edition for them.

Gardening for Profit.—New and enlarged edition. The success of Mr. Henderson's work has been something unparalleled in the history of rural literature. No work of its class has in this country, and probably not in any other, had anything like the sale this has met with. The reasons for this are that it met a want which no other book did, and the author told all the secrets of the business without any reservation. The publishers intended to bring out a new edition next fall, but the demand during the past few months has been such as to make it necessary to produce it at once. Several new chapters have been added, and, in the selection of varieties, much has been changed, though the plan of the work is the same as before. The new edition, now in press, will probably be ready by the time this reaches our readers, or a few days after. Though over thirty pages larger the price will remain the same, $1.50 by mail.

Our Western Office.—Our friends in the West are reminded that we have an office at No. 4 Lakeside Building, Chicago, Ill., in charge of Mr. W. H. Busbey. Subscriptions to *American Agriculturist* and HEARTH AND HOME are taken there, and sample copies of the papers and chromos are delivered, and orders received for advertising on the same terms as in New York. All our books are on sale at the Western Office. Please call and examine, buy, subscribe, and advertise.

Prize Essays on Lawn Management.—The makers of the "Philadelphia Lawn Mower" offer prizes for the best essays on the management of lawns. There are nine prizes, amounting in all to $368. The competing essays must be received at the office of the makers, 631 Market street, Philadelphia, before the first of June.

Black Ash Shingles.—"A Constant Reader," West Shelby, N. Y. We know of nothing that will prevent black ash shingles from warping; it is their nature to warp. If we had no choice but to use this timber we would work it up into what are called "shakes," strips two feet long, eight inches wide, and three quarters of an inch thick at the butt, and use them.

Cabbage for "Crout."—"H. C. C.," Adams Co., O. Any hard-headed cabbage is used for making sauer-kraut. The Flat Dutch and Bergen Drumhead are used about New York, but any one adapted to your soil will answer.

Bugs on Grape-Vine.—E. O. Wetteyer. The insects that eat off the blossoms of your grape are no doubt rose-bugs. The only remedy is to shake off early in the morning, catch in a dish with water, and kill.

The Michigan Bee Association will convene at Kalamazoo, May 6th, 1874. Arud C. Balch is President.

The Horticultural Exhibition of Lyons, France, is now one of the most important held in Europe; a note from the Secretary of the Cercle Horticole informs us that the next annual exhibition will be held in September next, 17th to 20th.

Buried Pork.—"C. W. N.," Essex Co., Mass., in digging a cellar, disinterred a fat hog which he had buried four years before, and found it in a state of almost perfect preservation. He asks why it did not decay. Fat buried in this manner decays very slowly indeed, and there was probably enough to protect the other parts of the animal. Oily seeds, when buried deeply in the soil, are preserved for a very long time. It often happens that fat, and even flesh, when buried, is converted into a peculiar substance called adipocere, and in this state bodies are found after very many years, with their form almost perfectly preserved.

Size of an Acre.—"J. D.," Brooklyn, N. Y. A piece of land 210 feet on one side and 207 feet 5 inches on the other, will make an acre. If an exact square is desired the side will be 208 feet 8 inches and $^{8}/_{10}$ of an inch. Upon newly broken prairie sod a crop of 20 bushels of wheat is a fair yield; with every favorable circumstance this yield may reach 25 to 35 bushels per acre. Even more than this has been occasionally raised.

Sending Plants by Mail.—"A. C. S.," Factoryville, Pa., writes—"I sent some strawberry, raspberry, and other plants to my son in Washington Territory by mail, packed in the following manner. I took common quart oyster cans, cut out one end to make room for packing, moistened the plants, filled the cans, putting some damp moss on top. Cut a piece of tin the right shape to cover the end of the can, and soldered it tight. Put paper around the whole for convenience in directing. Although they were nearly four weeks on the way, yet they arrived in good order, and nearly all lived."—This will answer in cold weather with dormant plants, but had the weather been warm, or the plants in a growing state, they would have been decayed and useless.

Newburgh Bay Horticultural Society.—This wide-awake society announces its annual exhibition for September 22d to 24th. Aside from the great shows at Boston and Philadelphia such a fine display of fruit can not be seen elsewhere.

SUNDRY HUMBUGS.—In fulfilling our duty in looking over the mass of humbug material, one is reminded of a certain resemblance these affairs have to plants. We hope the plants will excuse us for mentioning them in such company, but it is only in the matter of duration that humbugs resemble them. Some plants perform their career in a day, others take weeks and months. Again, some endure for a year and two years, while many continue from year to year indefinitely. The humbugs are many of them too lovely to last, and have almost the evanescence of the mushroom. Of this kind is the Magnolia (Iowa) "Library Concert," run by the promising Maynard. We mentioned last month its removal to Chicago, but before the article reached our readers the "moral" youth was stopped; the hard-hearted officers, who had no "music in their souls," arrested Mr. Library-Concert-man, and thus this affair went out almost as rapidly as a puff-ball under a hot sun. Of the annual kind the majority of the quack medicines are good examples, as the average duration of these is not more than a year. Now and then one of these turns out a perennial, but they rarely flourish after the first winter. The most lasting humbugs are those which are on the border line between rascality and respectability. The Kentucky Public Library Lottery is an example in which a scheme is kept along by the aid of names that have heretofore been considered respectable. This is a perennial, the existence of which depends upon the season. So long as there are showers of greenbacks every few months this disgraceful affair will survive, but when people become tired of throwing away money upon it there will be an end.

THE CRIES OF THE WOUNDED

after a battle is one of the saddest things about war, and it is really the sober side of our humbug matters. However vexed we may feel that a person should be so stupid as to trust his money to swindlers, whose promises every sensible person must know can never be made good, yet after all we read the letters of the victims with sadness. There is often a touch of the pathetic in the complaints of those who could ill afford to lose; but there is hope for them, as they generally request us to publish their cases as warning to others. The victims of the Union Furnishing Co., of Chicago, have not yet ceased to cry out. All the consolation we can give them is that Geo. B. Hodge & Co. are closed, and that they have thousands of companions in suffering. These letters are sad, but one from a man in Vermont is

A HORSE OF ANOTHER COLOR.

This gentleman likes the *Agriculturist* because it exposes humbugs, but he is on the lookout for a "gift enterprise" that is reliable. He sends us a circular of one which claims to have done business for ten years, and says, "If I could see any one who ever drew anything of any account, or a large sum of money and got it, I might have some faith." Faith in a gift enterprise! Here is a confiding gentleman. Why, bless your dear Green Mountain heart, the object of these men is to *get* money, not to give it. There are many things in which one may have "faith." To take no higher view, you may have faith that honest work will bring honest money, that a dollar earned will do you in the end more good than a hundred dollars cheated out of other people, as it would be if you drew it in a lottery—but "faith" in a "gift enterprise" never!.. ...Here we have it:

"DOCTOR MARSTELLUS IMPROVED MAGNUM OPUS."

What Dr. M.'s "big work" was before he improved it we don't know, but now it is a "chemical preparation for making all explosive fluids non-explosive." What mischief this will play with the nitro-glycerine business. And then "this preparation not only save lamps from exploding, but prevents chimneys from cracking and breaking." It will not mend a cellar door and put a baby to sleep yet, but when this "magnum opus" gets "improved" a few more times we can't say what it may do. Such things as these are hawked about the country by plausible, glib-tongued fellows, who can convince nine people out of ten that the claims are true, and apparently prove it by experiment.

Gumption is not an elegant word, but it is the only single one that we know of that expresses in short "an intelligent and practical knowledge of matters and things in general." If gumption could be imparted at schools, if a majority of people had it, these multitudinous humbugs would have "no show." Alas! the lack of gumption. Once in a while these venders meet the wrong customer. The chap with the "magnum opus" happened at Tiffin, Ohio, to meet with a man with gumption—but we will let him tell his own story: "This evening a young man called at my house selling a compound (see the inclosed circular). After putting some of his preparation into the lamp, he lighted the wick and stuck it in the lamp, but coal-oil of the proper standard will admit

of that. When he came to test the chimney, he dipped it in cold water, then put it on the lighted lamp, and as soon as he could he commenced throwing cold water on it without its breaking. I asked him to let the chimney get thoroughly heated, and then apply the cold water. The result was a broken chimney. Before he commenced his experiments I asked him what was your opinion and also that of Munn & Co. His answer was it was something new. He acknowledged before he left that he gave up all hopes of selling any to me after my asking the opinion of the agricultural and scientific papers."

If any live where they can not get this "magnum opus," we can tell them that a little *silicic oxide* or *calcic carbonate*, which the unlearned call sand and chalk, if put into a lamp, exactly 23 grains of each, will prevent all danger to the lamp—provided the right kind of oil is used. It may be well to say here that even very dangerous oil will extinguish a lighted match—*oil* does not explode; it is the vapor from the poor oil mixed with air that explodes.

DOUBTFUL CASES.

We have already stated that we keep many cases under advisement awaiting investigation, and when the suspected parties are at distant points this often takes a long time. Among the concerns that we have had inquiries about are several that look suspicious; but we can not give definite answers. If the writer of either of these inquiries should go to a merchant to buy goods upon credit, he would be asked at once for his references. Every man who has money should put himself in the position of the merchant who has goods to dispose of, and before he lets his money go out of his hands into those of an unknown person, demand references, or some assurance that he is to be trusted. The gentleman who inquires about the "Mississippi Valley Manufacturing Co." should not send money until he first finds out if there is such a company; which he can do by writing to the mayor or city clerk of the place..... If there is such a concern as the "Empire City Paper Co.," it does its business in a room far up-stairs, with a hole in the door for letters. We hope our Tennessee friend will get his paper.....The "Five Dollar Sewing Machine" chaps are—as the market reporters say—much inquired after. We have yet to see a $5-machine worth the money, and we have tried very hard. At one time we had a curious collection of these rattle-traps. We have just now but one, that sent out by A. Cateley, Supt., corner Greenwich and Cortlandt streets. If any one wishes to buy this for something less than $5, we are open to an offer "on account of whom it may concern." We are asked if this Cateley is the same Cately & Co. who offer cheap watches in another part of the city.

OFFERS OF COUNTERFEIT MONEY

still continue. We say offers, for these people are not fools enough to have or part with any. If they get a poor weak fellow into their hands, they will get his money and give him nothing in return—well knowing that one who enters into a bargain with them dare not "squeal." It is of no use to publish the names under which their circulars are sent, as each one of the gang has a dozen aliases, and they are changed so often that it can help nothing. The postal law checked the flood of circulars for a while, but the chaps send them to be mailed at small places where there are no detectives. The business presents no novel features.

MEDICAL HUMBUGS.

Almost every month there is some interesting novelty in this class of humbugs, but the spring styles do not open very attractively.....A young man asks our opinion of "Diffenbaugh's Remedy."—We do not give an opinion of secret remedies of any kind. If he wishes advice, we will say—let them alone.....Here comes J. W. Van Namee, M.D., all along with a lavender-colored pamphlet about "Psychometric and Clairvoyant Powers to Locate and Diagnose Disease." There! if that isn't "pooty tasted," we don't know. The whole subject is too much for us, and we turn to something more tangible. "The Good Samaritan," published by E. Andrews, Albany, N. Y. The great trouble about many of these incarnations of evil is that we can not tell just how bad they are without polluting our pages. Here is this Andrews, who blasphemously uses the name of Jesus, and on the next leaf proposes to do that which we can not mention. The pamphlet fairly reeks with foulness, deceit, and humbuggery. The wretch claims to have healed diseases "at the Holy Sepulchre, at the Well of Siloam" and numerous other sacred spots upon one page, and upon the next offers to tell how to catch fish without bait or net. He claims to have lived in Albany for over a quarter of a century, which shows what a city in the present day may tolerate and not meet with the fate that befell Sodom and Gomorrah.

THE "NATIONAL SURGICAL INSTITUTE."

A gentleman writes from Indianapolis that he highly approves of our course in showing up "humbugs," but thinks we ought not to include the above named concern, as he believes that it is doing "a great deal of charitable work, pecuniarily and professionally." If the persons managing this "institute" had not claimed in their circular to be regularly educated physicians, we perhaps should not have noticed it. We judge the "institute" solely by the manifestoes it sends out. Let us ask our correspondent what he would think if he received a circular like this: "The National Church, served by first-class, regularly ordained Ministers, open every day to attend to the cases of sinners. The most hardened that have been to other churches, and not converted, are advised to try here. We have several remarkable sermons on hand, of a kind not preached in any other church." Following this an enumeration of particular sins; then a lot of portraits—A B before attending, A B while being preached to, and A B after conversion. Besides this, the pattern of the clergyman's gown, three or four styles of baptismal fonts, and an exact representation of the communion service. Imagine a whole broadside covered with engravings of this kind to match an equal space on the other, covered by the most ridiculous claims for the peculiar efficacy of this church over all others. Would not our Indianapolis friend be simply disgusted with a circular of this kind? Would he not feel not only that the claims were absurd, but that the pictures were of things that should not be presented to the public eye? Would he not say, "If this church is not a humbug, and its ministers quacks, why do they act in a manner to make people think they are?" That is all we have to say about this institute. If the persons connected with it are educated men, why do they act like quacks? If properly educated physicians, as they claim to be, how horribly must they feel when they see the circular, which is absolutely repulsive with its human deformities and suffering! and is in form and manner like the advertisements of quacks and impostors.

Butter-working Machinery.—"J. A.," New York. The "Dake" process of working butter is as well adapted to the purposes of country stores, where butter of all kinds is received, as any we know of, and perhaps better. Such butter of various colors and qualities is not salable in the market except at a low price, but if well mixed and brought to a uniform color it is more readily salable, and fills the demand for a low grade by the poorer class of consumers. This is accomplished by this process. The address of the party is D. W. Dake, Beloit, Wis.

Patent Phosphate.—"T. M. H.," Hunterdon Co., N. J. There can be no patent upon a so-called superphosphate made by mixing 600 lbs. bone-dust with 200 lbs. oil of vitriol, and seven bushels of earth with some salt, gypsum, and nitrate of soda. It is wanting in novelty, as such mixtures have been made for years back by hundreds of people.

Milk Fever in Cows.—This disease is to be feared amongst cows over four years old that are well bred and good milkers, and that receive more than ordinary care and attention. The system in a vigorous condition, filled with rich blood, and not having the elasticity of that of a younger and growing animal, is suddenly subjected after calving to a reflux of the blood which has been circulating through the system of the calf. The drain upon the mother's system consequent upon the support of the calf's life is stopped, and a great reaction occurs. The parts of the body which have been excited during the birth of the calf suffer from the reaction, and the womb and udder and frequently the bowels become inflamed. Sudden changes of the weather also increase the difficulty, and after a fit of shivering, which may occur from the first to the third day, a fever sets in, the appetite fails, rumination is stopped, weakness across the loins causes a staggering gait or an inability to rise, the udder is hard, hot, and swollen, the animal groans, looks wild, and frequently falls into convulsions, or becomes frantic and dashes her head about violently. When these last symptoms occur, rapidly following the first, recovery is very doubtful. To prevent an attack of this disorder, the cow's feed should be reduced some time before calving, and only hay and bran gruel be given to her. The bowels should be kept loose by a few handfuls of linseed meal, and plenty of salt should be given. If the cow is in good flesh she should have one pound of Epsom salts with half an ounce of ginger a week before her time is up, and as soon as she shows signs of calving in the relaxation or looseness of the hinder parts, she should be kept in a quiet and well-sheltered part of the stable; a loose box or stall being the safest place, in which she need not be tied up. If there is a flow of milk it should be drawn from the udder. If the cow has had this fever previously, or her symptoms cause an attack to be expected, she should be given twenty-five drops of tincture of aconite three or four hours after calving, repeating the dose every six hours until four doses have been given. If, in spite of all precautions, an attack occurs, the aconite, as previously mentioned, should be given along with two drams of powdered opium in a bottle of thin gruel immediately. A pound of Epsom salts with half a pound of common salt dissolved in water, with some sugar or molasses to flavor it, should be given soon after. Cloths dipped in hot water should be placed across the loins, and the cow should be covered with blankets. All the cold water she will drink should be given as frequently as may be needed, and she should be kept as quiet as possible. The milk should be drawn every few hours. Pure, fresh air is also indispensable.

Seven-Months' Calf.—"Subscriber," Westchester, N. Y. It is not impossible for a cow to produce a perfect calf in seven months. Cases occasionally occur the authenticity of which is undoubted.

Eggs all the Year Round.—"W. H. H.," Jersey City, N. J. It can not be expected that a hen should lay continually. The productive capacity of a hen is enormous when she lays moderately well. If she lays 120 eggs a year she produces fifteen pounds, or thrice her own weight. Some time for rest is therefore necessary. But if hens are allowed to set and produce a brood of chickens, their time is not only profitably employed, but by skillfully arranging the time of setting, some may be brought into laying while others are "laying off." Some hens may be set early in the summer and they will lay in the fall, and some may be set later and they will lay during the winter if fed generously and kept warm.

Cross-bred Fowls.—"W. H. H.," Jersey City, N. J., writes as follows: "A neighbor of mine crossed a Black Spanish hen with a White Leghorn cock. Some of the chicks were black and some white, but the most of them were a mottled gray color, which have made very fine fowls, and have proved themselves remarkably good egg-producers. The pullets commenced laying December 26th, and by March 1st the flock of twenty-five had laid 586 eggs.

As to Bots.—"D. J.," Ontario. Bots are the larvæ of the horse gad-fly (*Œstrus equus*), and are in a condition exactly equivalent to that of the caterpillar of a moth or butterfly. They therefore can not breed or reproduce themselves in the stomach of a horse, being imperfect insects and incapable of breeding. It is easier to prevent their presence in the horse's stomach than to get rid of them. If the yellow nits or eggs which may be seen upon horses' knees or shoulders in July or August are washed off with warm water, or scraped off with the edge of a knife, the horse can not lick them off and carry them to their temporary resting-place. Every farmer should learn the natural history of the insects and animals with which he comes in contact; then he would know how to treat them with propriety.

To Kill Lice.—"D. J.," Thornhill, Ont. Whale-oil is fatal to lice and not hurtful to cattle. An ointment of three parts of lard and one of sulphur liberally applied is also destructive to lice.

Wheat Growing in Minnesota.—The St. Paul and Pacific Railroad Company have instituted a novel method of disposing of their lands in Minnesota. They sell 640 acres to one or four (not more) persons at $6 per acre without any payments until the third crop has been harvested. The terms of sale are that the purchaser shall fence the whole of the purchased tract, break up the surface, excepting that part which may be too wet for tillage, plant forty acres in timber, and cultivate the rest in crops each year. The cost of the improvements by contract is as follows: breaking, $3.50 per acre; sowing with wheat and seed, $2.87½; harvesting, $3 per acre; thrashing and hauling to depot, 14½ cents per bushel. The average yield of wheat is 20 bushels per acre, and the price from 70 cents upwards. Persons with a capital of $5,000 are now engaged in raising wheat in Minnesota upon lands purchased on this plan, with every prospect of raising the purchase money out of the land before the time of payment shall arrive.

Spent Hops as Manure.—"W. B. C.," Sandusky City, Ohio. Spent hops are a very valuable fertilizer and are worth drawing 5 miles. They may be used as an absorbent in the stable or be composted with the manure, or piled up until rotten, being frequently turned to prevent dry rot, and then hauled to the field and spread and harrowed into the soil. As a general rule manure should not be plowed under unless the land is to be soon cross-plowed, in which case the manure is brought near the surface again; and this is the best place for it.

Artificial Manures upon Poor Land.—"R. H. S.," Fayette Co., Pa. It would not pay to buy guano or superphosphate to apply to a corn crop without there was something in the soil to aid the effect of those fertilizers. They start the crop and it looks promising, but if the soil is not able to carry it on to maturity they can not do it alone, and the crop falls off and fails to pay their cost. This is beginning at the wrong end. The first thing to be done is to save the manure you are now wasting as you say by exposure to rain. It would certainly not pay to borrow money to buy guano in this case at $110 per ton; but it might pay to buy some extra feed for your stock and improve the quality of the manure, and to make improvements in your stables and yards to prevent its waste.

Experiments with Waste from Wool-scouring Vats.—"G. P. L.," Philadelphia, favors us with the following experience with the waste from vats in which wool had been scoured. He pumped the water into a tight wagon box, holding 10 barrels, and hauled it on to the fields, where it was spread. A timothy meadow, to which it was applied, yielded 3 tons of hay per acre, and very good fall pasture. The crop of corn was increased by it one fifth, in yield of grain and largely in fodder. Potatoes failed partially; mangels failed entirely, and Hungarian grass, sown upon the same ground as a substitute, also failed. The waste contained the loss of 20,000, in shrinkage of 50 per cent on 40,000 lbs. of wool, which consisted of yolk and sand mainly; 5 casks of soda ash, 10 barrels of urine, and 5 barrels of cotton seed oil soap. (We should like to know upon what extent of land this was spread.)

Agricultural Plaster.—"J. V. V.," Salado, Texas. The sulphate of lime used for manure, is not calcined, but is simply the rock, crushed and ground fine. It is worth about $7 a ton in New York.

Bones.—"E. R. S.," Greenbrier Co., W. Va. The best method of reducing bones for use in a garden is to place them in barrels in layers along with unleached wood-ashes and keep them moist for several weeks, when they may be readily pounded fine enough for use.

Plaster for Market Gardens.—"M. J.," Cherry Grove, Pa. We have no reason to believe that plaster would be of great service upon market gardens. It is a special manure valuable upon clover, peas, corn, and other broad-leaved crops grown in the field, but it is not sufficiently stimulating for the purposes of the market gardener; certainly not if used alone, but if used along with others it might be worth while trying with cabbages, potatoes, or corn. When sprinkled upon young cabbage plants, beans, melons, or turnips, it is often of use to drive off the flea or the squash bug.

Ashes for Top-Dressing Wheat.—"R. W. T.," Wicomico Co., Md. Wood-ashes may be applied to wheat as a top-dressing at any time. They will not injure either bones or superphosphate that may have been applied at the sowing of the wheat.

Shallow Plowing for Corn.—"R. H. S.," Dunbar, Pa. It was once said by an intelligent farmer that the soil should not be plowed deeper than it could be manured. There is much truth in that idea. Upon that principle it would not be well to plow a sod for corn so deep that the sod is buried beyond the reach of the roots of the corn. The depth of the plowing depends altogether upon the character of the soil, and what may be right for one soil may not be so for another.

Peas.—"L. W. F.," Chambersburg, Pa. There are two varieties of peas known as Canada peas, one the Black Eye Marrow Fat and the other the Gray pea. The first is suitable to a rich soil, upon which it makes an extraordinary growth of fodder. The second is a pea with a less developed vine and smaller seed, but it will yield a crop where the first would be unprofitable. Any produce dealer or seedsman in New York could supply the seed. It arrives in this market in barrels, and is now quoted at $1.25 per bushel.

Poland China Hogs.—"L. G. C.," Hawcahon, Ill., writes that he has sold his last July Poland China pigs in February of this year, and they weighed from 225 to 240 pounds. The spring pigs of the same breed were sold in the fall, and averaged 300 pounds each.

The Slide Gate.—"J. A., Jr.," Morrow Co., Ohio. The simple plan of sliding a gate upon a roller or a bar placed between two posts has been in use for many years. But there have been many patents taken out for peculiar rollers to be adapted to the sliding gate. We have frequently cautioned our readers against giving notes to swindlers who claimed patent rights which do not belong to them, etc. If any device has been in use two years before a patent covering it was procured that patent can not be sustained, and if any person claims a patent right upon a gate, simply sliding upon a bar or an ordinary roller, which has been procured within 20 years past, he claims more than he can sustain at law. When one of these patent claimants comes along do not be frightened or let him bully you into paying anything. Ask to see his patent. If he can not show it, get the name in which it was issued and precise date of issue and tell him to call again. If he is an impostor he will bluster and will not be heard of again. If he is a real owner of a patent that you have unintentionally infringed, he will behave like a gentleman and give every opportunity for you to find out if his claim is a just one. For a small fee a copy of the patent can be had from the patent office. Recollect that the farmers have some rights that even owners of patents are bound to respect, and that the law was not made to oppress honest and innocent people.

Curdy Milk.—"A. A. B." When a cow's milk curdles while sweet and her yield suddenly falls off three fourths, it is evident that her health is seriously affected, but how or why, it is impossible to say without knowing something more than this bare fact.

Catarrh in Sheep.—"R. S." Wayne Co., Michigan. Sheep if kept too warm in the winter will take cold and run at the nose. There is danger that this may affect their lungs and cause fatal disease in the spring. The remedy is to keep them during nights in an open shed with a yard attached to it, so that they may have the choice of in-doors or out-doors as they desire. They will generally choose the outside of the shed. A tea-spoonful of pine tar placed upon their tongues and one upon their noses will be some help. During the day they should have, at least, some hours' exercise, in a field or in a large yard in which there is no manure.

Pure Light Brahmas.—"A. L.," York, Pa. The description of a pure Light Brahma, according to Tegetmeier, is as follows: Head white, neck white with black stripes down the center of the feather, breast, belly, and thighs white, back and shoulders white, saddle white striped with black, wings white with a black stripe on the edge, formed by the black feathers known as "primaries," tail black, legs bright yellow, feathered with white feathers slightly mottled with black.

To Destroy Lice.—"J. H. F.," Colony, Mo. There is no really effective method of destroying lice upon any animal without oil or grease of some sort. In some recent experiments in England a mixture of one part of sulphur with three parts of lard and a mixture of one part of oil of tar with three parts of linseed oil destroyed the lice to which they were applied almost immediately, while corrosive sublimate, mercurial ointment, arsenious acid and carbolic acid were without any effect at the end of two hours, and tobacco water destroyed the vermin at the end of an hour. We have found a mixture of lard and kerosene oil to completely destroy lice both upon poultry and calves without any injury to the animals whatever. Kerosene oil alone will severely injure the skin.

Feed for Pigs.—"H. D.," Madison Co., Iowa. There are no roots so valuable for feeding to hogs, cooked, as potatoes. The prolific coarser varieties as the Harison, Peerless, or Garnet Chili would be the best to plant. The best green crops for summer feed are clover, peas and oats mixed, vetches or cabbages. Rye would answer for early spring feed. Hogs might, no doubt, be profitably pastured within hurdles, as is commonly done with sheep.

Care of the Poultry Yard.—"S. P. T.," Susquehanna Co., Pa. We have not sufficient room here to give full directions for managing a poultry-yard with all sorts of fowls and under all circumstances. Few books even can do all that, but "Wright's Poultry Book" will be found to contain as much as any other book we know upon these matters. Price $2.00.

Food for Sheep and Lambs.—"E. P.," Otsego Co., N. Y. Roots should always be provided for sheep, yet they must not be fed in excessive quantities during the winter, as they then become indigestible and dangerous from the large amount of water they contain, which reduces the temperature of the stomach, and in the case of ewes in lamb have often caused death. For 100 sheep two bushels of roots, sliced and sprinkled with bran, may be given at a feed. Hay or straw should always be fed between the feeds of roots. The best roots are sugar beets and ruta-bagas. Mangels are considered less valuable than these. Young lambs may be fed a small quantity of bran and ground oats, scattered thinly in a broad flat trough so that one can not get more than its share.

Impregnation of Turkeys' Eggs.—"T. Burr Marsh," Tewkesbury, Mass., states that in the spring of 1870 he purchased a flock of hens and with them a hen turkey which laid 15 eggs, and then wanted to set. The eggs were placed under hens; the turkey was broken up, and soon commenced to lay again. The second laying of eggs upon being set under hens proved fertile although there was no turkey cock in the neighborhood. Several other correspondents have related similar experiences, which shows that one impregnation fertilizes the eggs of a second brood of a turkey hen.

Nests for Early Chickens.—"J.," West Vincent, Pa., says that hens' nests for early hatching at this time of the year should be lined with clay. They are thus made warmer, being air-tight, and are cleaner than if of any other material.

Beans for Feed.—"Inquirer," Clinton, Co., N. Y. Old or discolored and unmarketable beans may be ground and fed to stock, either cows, hogs or poultry, with profit. But unless ground they are not readily eaten. For hogs or poultry the meal should be cooked and fed in thick mush, cold; for cows the meal should be stirred in hot water and given as a drink when nearly cold, or may be mixed with cut hay.

Sheep in the Orchard.—"B. S. H.," The obviously best cure for a sheep that barks apple-trees is to keep it ont of the orchard. It is their nature to do this whenever they have an opportunity.

Duration of Scab.—"G. W. C.," Potter Hill, N. Y. It requires at least two years before the pasture or the yards which have been occupied by scabby sheep will beccme safe for the occupation of a healthy flock. Those places where the sheep have rubbed themselves have become infested with the insect which causes the scab, and in bad cases the ground itself may be in the same condition by means of dropped locks of wool; so that even careful whitewashing of the yards and fences may fail to make the place secure.

Slow Killing of Meat.—Philip Mick. The length of time occupied in killing an animal has no ill effect upon the meat; on the contrary, it is said to make it tender. For this reason, as well as to make the flesh white, butchers used to bleed calves to death so slowly that they were often twelve hours in dying, and the same practice was in use with turkeys until the cruelty was stopped by law. It is more likely that the diarrhœa complained of was due to some unhealthy condition of the animal, possibly from its possessing some parasite in its flesh, as "measles," which always produces this effect.

A Poultry House for Young Chicks.—"J.," West Vincent, Pa., describes a house in which he successfully raised a large number of early chickens last year as follows: It was ten feet long by eight wide, made of boards except the front, which was glazed. There were four corner posts, a floor in it, and it was kept warm by a stove. The sash for the glass was made of laths, and the whole cost of the material was a few dollars. In fine weather the chicks were allowed to run out in a small yard exposed to the sun. In this house there was room for two hundred chicks. By giving good care to the chicks they may be taken from the hen very early, and the hen put to laying again.

Cure for Balking.—"W. P.," Port Chester, N. Y. There is no specific cure for a balky horse. Gentle treatment and extreme patience have often effected a cure of this vice. Violence and punishment only make matters worse.

Millet for Soiling.—"H. K. G.," Rockland Co., N. Y. Millet makes a very good soiling crop. We do not know that it is any better than fodder corn or so good, but it has the advantage of making a variety which is very agreeable and desirable for cattle, whose appetite it is necessary to stimulate in this way. The seed is very small and should be lightly harrowed in upon mellow soil. This crop succeeds better upon well-drained rich soils. If the soil is moist we would rather choose oats and peas mixed for a fodder crop.

Removing Turnip Flavor from Milk.—Mrs. "C. C. E.," Randolph, Wis., sends us the very old information that a pinch of saltpeter dissolved in the milk will remove the flavor derived from feeding turnips. As this may be new to some of our more recent

readers we repeat the fact, as well as the equally useful one, that if the turnips are fed immediately after the milking the next milking will be free from any disagreeable flavor.

Horse Talk.—"Clip," Natick, Mass. We would not breed from a spavined mare; the deformity, or weakness which causes spavin, is often constitutional and hereditary. The Turf, Field and Farm, published in New York, is a weekly journal devoted to the "horse interest" chiefly.

Sorghum.—"New Beginner," Ogechee, Ga. Sorghum, or as it is sometimes called, China sugar cane, is planted and cultivated the same as corn. About two quarts of seed per acre is used. The hills are generally planted four feet apart in check rows. The yield of syrup is from 100 to 300 gallons per acre, but so far the manufacture of sugar from the syrup has not been a success, on account of the difficulty of crystallizing it.

The Northern Spy in New Jersey. I. J. Blackwell, of Titusville (N. J.) Nurseries, writes: "This is justly considered one of the finest apples to be found in our markets. In size, color, and quality it is all that can be desired. It seems to be a fair but not heavy bearer here; and unfortunately in this section it ripens in September, and will not keep through October. The Tompkins Co. King is a September fruit, and the Rhode Island Greening ripens early in October, and will not keep through November. Many of the fine Northern apples lose their late-keeping qualities here. The Fameuse or Snow apple ripened this year in August."

An Egg within an Egg.—"R. C.," Philadelphia. Such cases occur now and then. We have seen several, and they are frequently reported.

Wheat Growing in Kentucky.—"O. B.," Bogle Co., Ky. The practice of growing two crops of wheat in succession, then clover for hay, followed by clover for pasture, and again commencing with wheat, will soon wear out the richest land. On your best limestone soils you might by feeding the clover and spreading the manure thus made, and then pasturing and plowing under a good sod, raise one crop of wheat every third year, but we doubt if you can raise two crops in succession for many years.

Corundum.—Will the gentleman who several months ago sent us specimens of Corundum kindly inform us what locality they are from?

Renting a Small Farm.—"J. O. B.," Pa. It is better as a general rule to rent a farm either for a money rent or for half the grain than to hire it worked, when the owner can not supervise it himself. Upon 27 acres it will hardly pay to keep a pair of horses and hire a man steadily. There is not sufficient work to keep them from "eating their heads off," unless it is a market garden, and then there would be more than they could do. An ordinary farm of that size might make a living for one man, but it is too small to make any profit for an owner who has to hire labor.

Bois d'Arc.—A Louisville (Ky.) paper publishes a long article on the wonderful qualities of the Bois d'Arc tree of Texas, and it is now going the rounds. If the article had only stated that what is called Bois d'Arc and Bodock in Texas is elsewhere known as Osage Orange it would have been more sensible.

Forcing Rhubarb.—"J. B.," Chicago. It would be a waste of money to put up a house for forcing rhubarb in winter. A hot-bed will answer every purpose. As the tenderest stalks are produced in the dark, a pit containing a plenty of fermenting manure covered with boards will give as good results as a more expensive arrangement.

Report of Swine-Breeders' Convention.—"J. J. D.," Sabina, Ohio. For this report apply to Col. F. D. Curtis, Charlton, Saratoga Co., N. Y.

Remedy for Potato Blight and Rot.—"D. C.," Berkley, Mass. We know nothing about this save what is given in the circular. The statement that insects are the cause of the potato disease is absurd, even if supported by the statements of members of Congress. We do not use or advise the use of or advertise any manures unless we know their composition.

For South Carolina.—"R. A.," Laurens Co., S. C. Merino sheep are more suitable for South Carolina than Cotswold. The latter thrive better in a colder climate. Essex pigs would probably suit your climate best, Berkshire next, and the Poland-China would not be suitable. In size, these pigs rank in the order in which they are mentioned, the first being the smallest. The muzzle shown in the *Agriculturist* of October, 1872, is the best preventive of cribbing we know of. Morgan horses are generally dark bay or brown. Orchard grass would probably be the most suitable grass for South Carolina. It needs a rich, dry soil.

Hennery Wanted.—"C. C. M.," Greenwich, Ct. We do not know where there is a hennery on a large scale carried on expressly for the production of poultry and eggs for market. If any of our readers know of such a one we should be glad to learn of it, for our own sakes as well as for the information of our correspondent.

Plant Trouble.—"Western Subscriber," Ill., is troubled by flies which deposit eggs in the earth of flower-pots; these hatch into small white maggots, which injure the roots. Try watering with perfectly *clear* lime-water. We have tried this in some cases for earth-worms without injury to the plants. Whether it can be used for all plants we can not say.

Cancer in the Eye.—"S. W. L.," Oskaloosa. We know of no cure for cancer in a cow's eye except removal of the eye, which could only be done by a surgeon.

Cabbages for Seed.—C. N. Brown. Cabbages from which seed is to be raised must have the stump preserved quite as carefully as the head. Some set them in trenches deep enough to hold the whole cabbage, and when they are a little frozen cover them plentifully with litter to keep them at a uniform low temperature. Others open a furrow, and set in the cabbages inclined one upon another in the direction of the furrow, and carefully cover the stumps with earth. When freezing weather comes on, earth is drawn up to cover the heads sufficiently to prevent freezing and thawing.

Corn in Egypt.—G. W. Caunnack, Ashley, Ill., which is down in Egypt, sends us some figures of his corn crops to work up. He says he shelled 20 ears and the corn weighed 13¼ lbs. He plants four feet apart each way, with two stalks to a hill. He gets from one to six ears to the hill, and the corn weighs 66 lbs. to the measured bushel. From these figures we get the following: At 4x4 feet there are 2,722 hills to the acre; allowing three ears to the hill as an average there would be 8,166 ears. If 20 ears weigh 13¼ lbs. there would be 5,406 lbs. of shelled corn, at 56 lbs. to the bushel, equal to 98 bushels per acre.

A Cultivating Harrow.—"W. E. M.," Clay Co., Minn. As the object of cultivating is to loosen and mellow the soil, as well as to destroy weeds, the use of a roller immediately after a cultivator or harrow would neutralize both these effects, and would therefore be unadvisable.

Shrinkage of Corn.—"D. W. H.," Utica, Mo. It depends somewhat upon the kind of corn how much shrinkage there will be in drying. A variety with a large cob would shrink more than a smaller variety. Southern or Western Dent corn will shrink 25 per cent in drying, and flint corn about 18 to 20 per cent.

Three-Horse Clevis.—"F. C. Wright." The clevis of which you send a drawing and description is patented. Persons making and using it are therefore liable to the owners of the patent right for infringement.

Lucern (Alfalfa).—"J. K.," Wilmington, O. When a good plant has already a good name by which it is widely known, it only leads to a confusion of ideas to give it a new and incorrect name. The plant now frequently called "alfalfa" (its Chilian name) is lucern, and is widely cultivated in Europe as a green forage plant. It would doubtless succeed very well in Southern Ohio, but needs a deep rich soil for its profitable culture. It will stand several cuttings in a year, and last several years. The advertisement of the Rev. J. Copeland which you send to us is a genuine affair, and no humbug.

Moles.—"M. A. S.," Warrenton, Va. We have not been very successful in getting rid of moles. The latest remedy we have seen is to make a dough of meal mixed with arsenic; make a hole in the run, and drop in a pill as large as a marble; then cover the hole to exclude light. This, if followed up, is said to destroy them—but we have not tried it.

Easter Flowers.—It is estimated that the floral decorations in the New York City churches on Easter Sunday cost a total of upwards of thirty thousand dollars! A small portion of these only are purchased by the funds of the churches, the greater part being voluntary gifts by wealthy attendants.

Mole or Drain Plow.—"G. E. S.," Union Co., Pa. R. H. Allen & Co., Water st., New York, make a plow that loosens the subsoil at a depth of 14 to 18 inches, which they call the Miner subsoil plow. The use of this plow, which can be drawn by two horses, will probably be as satisfactory in drying the surface soil as the more costly and heavier mole plows.

Hitching Horses.—"H. B. A." It is not safe to hitch a horse to a weight. We would not hitch a colt in that manner. The heavier the weight the nearer the approximation to safety, until the weight is so heavy that the horse could not move it. The flatter the weight the better it would be, and 50 lbs. would probably be safe under ordinary circumstances. A firm post as high as the horse's head is the safest thing to hitch to.

Bee-Stings.—"W. A. B.," Bridgeport, Ct., writes: "The best thing I have ever tried for bee-stings is to first pull out the sting, and then take a small tube, the end of a hollow key for instance, and firmly press round the sting for a short time. The reasons for its action, I think, are two: first it presses out the poison, second it bruises the flesh so as to partly stop its spreading. It must be done very quick to do any good. I have tried it, and a good many other remedies, and this has done the best."

Stable Floors.—"H. B. M.," Providence, R. I. A plan of laying a stable floor which is water-proof, solid, and permanent, is described in the *Agriculturist* of November, 1873, page 415.

Pure Butter for 3 cts. a Pound.—"J. K." If farmers, who should know all about butter, can be induced to believe that it can be made in any other manner than from cream, or by the use of powders or any other mixture, and to pay $1 for the secret, they richly deserve to be swindled, because they become, by trying to make butter in such a way, nothing better than swindlers themselves.

Lice upon Chickens.—"Mrs. S. A. P.," Alpine City. Chickens are everywhere subject to these parasites, which when numerous are frequently fatal to the chicks. The remedy is to grind up some sulphur and lard very fine, and rub the ointment upon the chicks' heads and beneath their wings. Severe heat in a dry climate is a cause of many troubles to young chickens. In such circumstances they should be provided with shade, plenty of water, and green food, such as lettuce, chopped cabbage, etc.

Butter from Suet.—"S. D. J.," Wilmington, Del. It would be useless to give the process for making suet into a substance resembling butter, because it is subject to a patent, and therefore could not be used without paying for the patent right. Whether the process is worth paying for or not is a question we can not answer.

Preserving Meat in Summer.—The refrigerator has come to be indispensable to the comfort of the household. Soft butter, sour milk or cream, tainted meat, and dry, shrunken bread are no longer tolerated in any family whose means enable them to procure a refrigerator. In these, as in other things, there are some requisites necessary for perfection. That perishable articles may be kept from spoiling during hot weather, the cooled atmosphere in which they are kept should be dry. Moisture rapidly produces taint and decomposition, and it is because of the abundant moisture in ice-houses that meat or butter so soon spoils in them, and that vegetables become moldy. Mold is generated with rapidity only in moist atmosphere. In dry air the mold plant can not grow, neither can flesh, fruit, or vegetables spoil. For these reasons the refrigerator should be so arranged that the inside air, while it is cooled by the ice, should not be in contact with it. A refrigerator upon this principle is made by A. M. Lesly, of New York, and is known as the "Zero." The ice is in an upper chest, from which water, as the ice melts, passes through a charcoal filter, and is collected in a reservoir, from which it is drawn by a tap in the front. Upon one side of the ice chamber is a deep chest for milk or bottles of liquid. Below is a close chamber, which has no communication with the ice above; consequently the air in it is dry. What moisture it may have contained is deposited upon the cold walls of the ice-box, from which it trickles through a pipe in which is an air-trap, and is discharged into a pan placed underneath.

Apples in Sawdust.—A "Subscriber" writes that he found sound apples last October in a box in which they had been packed in dry sawdust the fall before. Sawdust is no doubt a good material in which to pack fruit, provided it is from wood that has no unpleasant odor.

Sheep Tick.—"M.," Melery, Iowa. The reddish insect which infests sheep is the sheep-tick. There is no better method at this season when dipping is out of the question than to go over the sheep and kill the ticks with a pair of small scissors, crushing the eggs that are found like little brown balls, at the same time, between the points of the scissors. We have gone over 100 sheep a day in this way, and few ticks have escaped. They will be found mostly about the sides and brisket.

Horse and Cow Stables.—"J. A. E.," Baltimore. In the *Agriculturist* of December, 1872, there was a plan of stable for horses and cows in a basement building, which may probably be what you want.

Raising Pork in California.—"H. A. W.," Hay Fork Valley, California. With pork at ten cents a pound it ought to pay well to raise hogs. If clover can not be grown in California, at least alfalfa (lucern) can be, and that makes an excellent green feed for hogs. Potatoes, oats, barley, and rye all make good feed, and wheat if boiled with potatoes would also answer excellently.

The Jersey in the Dairy.—"E. K.," Whitewater, Wis., sends the following statement of the production of butter by a Jersey cow during last season. The cow had just dropped her third calf, and was four years old, and during the month of May was injured in one teat by another cow stepping upon it. The yield was as follows: March, 40 lbs. 10 oz.; April, 41 lbs. 10 oz.; May, 31 lbs. 10 oz.; June, 39 lbs.; July, 33 lbs.; August, 31 lbs. 4 oz.; September, 35 lbs.; October, 26 lbs.; November, 20 lbs.; December, 17 lbs. 4 oz. The total production for the ten months was 315¾ lbs., or over one pound per day on the average. During the last two months 24 native cows, two of which were fresh, and all of the others had come in since the Jersey, made on an average 12 1/6 lbs. per month, and the Jersey made under exactly the same treatment 18⅛ lbs. per month. He thinks this a fair test of the dairy value of the Jersey.

Concrete Pipe.—"M. O. B.," Nunda, N. Y. There must be some mistake in procuring the proper kind of cement or the pipe could not have failed. There are hundreds of miles of cement pipe laid in the country; several miles of it have been laid by the superintendent of the Onondaga (N. Y.) salt works with entire success. We have also had no trouble in laying cement both for a cistern and pipe.

Underdraining.—"C. W. H." has a farm of 172 acres, one mile from Columbus, Ohio, that he wishes to drain. It slopes to the east with a smooth surface; has a fall of 10 feet in 1,100 feet. Soil, on two thirds of the farm, clay, the other third black. He asks what is the best material to use. He can get pipe tiles, 3½-inch bore, at 35 cents per rod; flat stone, 75 cents per perch; burr-oak lumber suitable for draining, $20 per M. Can get second-class sewer pipe, two feet long and six-inch bore, at $1 per rod. We would very earnestly advise him to use tiles. Taking everything into consideration—ease of laying, durability, and efficiency—they are far cheaper than anything else. For the sub-drains 3½-inch tiles are not needed; two-inch pipes are large enough. A very common mistake is to lay the main drains with two small tiles, and the sub-drains with tiles needlessly large. For a main drain the six-inch sewer pipes would be excellent, and would carry off an immense body of water.

Remedy for the Curculio.—M. M. Ostrander. There is no plan or device for protecting fruit from the curculio worth anything except the plan of jarring the trees and catching and destroying the insects. All methods by hanging such things as corn-cobs soaked in syrup or in carbolic acid even in the trees are as ineffectual as trying to catch old birds with chaff.

Cross-bred Pigs.—"C. W. H.," Columbus, Ohio, writes: "I have crossed a thorough-bred Essex on Poland-China sows. The pigs are very fine."—We should expect a very useful class of pigs from such a cross. One or two more crosses with Essex may be used with advantage.

The Star Thistle.—"Senex" writes: "*Dear Mr. Agriculturist:* I wish to follow up your remark about *Centaurea Americana* as a well-known cultivated plant. Being older than you are, I can remember a long way back. About forty years ago we used to have this showy annual in our country gardens. Nuttall introduced it into cultivation from Arkansas. Barton figured it at Philadelphia in 1822, and Don in England in 1831, since which I suppose seeds have always been in the market and the plant in many gardens. Lately, Thompson, of Ipswich, England, raised a particularly good variety of it from E. Hall's seeds, gathered in Texas, and this has given the species a new start."

After Ruta-bagas.—"C. A. K.," Arlington, Mass., writes that he has raised three hundred bushels of ruta-bagas upon half an acre. The best crop that can follow these roots is rye or wheat, with grass and clover. The best rotation when roots are raised is corn, oats, followed by turnips the same season, or ruta-bagas or mangels the next season, and finally wheat or rye, with grass. But several hundred bushels of roots can not be taken off from an acre of ground without exhausting the soil; and the reason that your crops have failed after the ruta-bagas is probably for want of the needed fertilizer. Two hundred and fifty pounds of fine bone-dust or of superphosphate, with a few loads of manure, might have told a different tale.

Coughing and Wheezing Hogs.—"L. C." It is not often that hogs suffer from cold. They more frequently suffer from too much warmth and insufficient ventilation. Then a sudden change of temperature affects the lungs or bronchial tubes, and coughing and difficulty of breathing result. When so affected, rubbing the throat and chest with turpentine has been found beneficial, but generally a change of food from grain or meal to boiled potatoes or turnips, with the removal of the cause of the trouble, will remove the complaint.

China Geese.—"J. H. S.," Logan, Ind. The only distinguishing characteristic of the Chinese gander is its shrill voice, which is so marked as to be readily noticed. The marks of these birds are alike in both sexes.

Reclaiming a Swamp.—"Inquirer." There is a process known in agriculture as "paring and burning," which might in some cases be usefully employed in reclaiming swamp lands after they have been drained. Draining is the first thing absolutely essential. Then with a sharp broad-shared plow turn a broad furrow three inches thick, thus cutting all the roots of bushes, weeds, and tussocks. The sods remain until dry, when they are cut with a broad axe into lengths, and are piled into heaps and burned. The ashes are scattered over the bare surface, which is then sown to grass. Timothy and red-top would be suitable for such a soil. The seed may be harrowed in with a sharp light harrow. This is costly, but where meadow land is worth $100 an acre it pays. We have succeeded in this way, without burning the sods however, using them with lime for compost for uplands, and lining the drained and cleared swamp with 50 bushels of lime per acre. Timothy grew four feet high upon the new soil.

Use of Swamp Muck.—"I. H. P.," Lexington, Ohio. Swamp muck is of considerable value, when free from sand, as an absorbent in the stable and a help to the manure pile. But it should be dug some months, frozen, and well dried before it is used.

Butter from Sweet Cream.—"A. B. L.," Greene Co., N. Y. There is no method of making butter from sweet or any other cream but by churning in the usual manner.

A Rough-coated Horse.—"A. B. L.," Leeds, N. Y. A rough, staring coat upon a horse is a symptom of ill-health. A change of food is often sufficient to restore the smoothness of the coat. Boiled oats or scalded bran, with a few handfuls of linseed-meal mixed in, and fed cold, may be given along with some mild alterative or tonic medicine, such as half an ounce of sulphur or one dram of copperas daily in the food.

Muzzle for Crib-Biter.—"B.," Perryville, Ill. The muzzle referred to in *Agriculturist* of October, 1872, is not made by any one person in particular. Any blacksmith or wire-worker could make one in half an hour. Very stout wire or light band-iron should be used, riveted where the pieces cross each other.

The Japan Pea.—In reference to this pea, which was described in the Feb. No., 1874, Mr. J. Niel Stribling, Anderson Co., S. C., writes:—I raise the Japan pea as a field crop; the yield is much larger than that of any other pea. I cut the stalks for forage and grain, just before they are entirely ripe, in order to get the best feed, and thrash in a thrasher. The finer part I take for hay—my cows are very fond of it. To save seed, the top of the plant is taken as it ripens first, and it must be stored in an airy place immediately after cutting, else the sun will pop open the pods. Cultivation, soil, etc., are the same as for cotton. Its maturity is the same as that of the cotton plant. It is a good table pea if soaked twelve hours in salt water before cooking."

Treatment of Lampas.—"J. L. G.," Sappington, Mo. The swelling of the bars of the mouth is sometimes caused in young horses by the cutting of the teeth, in which case scoring the swollen parts lightly with a sharp knife will cure it, or, what is better still, touching them with lunar caustic. In old horses it occurs from overfeeding with corn or other grain, when a change of food and cooling medicine should be given.

The Ecraseur.—"B. G. L.," Lakeville, Mass. The above-named instrument for castrating colts without loss of blood, is made by D. W. Kolbe, Philadelphia, instrument maker to the University of Pa.

Treatment for Scab.—"D. M.," Salem Co., N. J., reports the following successful treatment of scab in his sheep. He simply applied kerosene oil with the squirt-can of his thrashing machine to every scabby spot, carefully going over the flock. He also gave each sheep daily, for a week, half an ounce of sulphur in meal. The lambs were treated the same as the sheep. The result was a complete cure in the course of two weeks.

Jersey and Alderney.—"J. W. A." The unfortunate confusion of ideas as to the proper nomenclature of these cattle will probably exist for some years to come, and make it necessary for this oft repeated statement to be re-repeated a hundred times. Alderney was formerly understood as referring to any cattle from the Alderney group of islands, Jersey, Guernsey, Alderney, and Sark. As the cattle are really distinct breeds, and have been very strictly kept so for many years, the name of each island is now, and has for some years been given to its own particular breed of cattle. Jersey and Alderney are therefore two distinct breeds. The same trouble is now laying up in regard to Dutch or Holstein cattle, which are Dutch only when they are large, black and white, heavy-milking cattle from Holland, and Holstein when they are red, brown, and other colored beef cattle from Holstein.

Time to use Plaster.—"A Reader," West Shelby, N. Y. Plaster should be used in the spring as soon as the growth is fairly started. As 400 parts of water are required to dissolve one of plaster, and it is very heavy and readily carried in loose soil beneath the reach of the plants, it is only when there are copious rains or dews that it produces its best effects.

Patching Old Roofs.—"C. H. P." It is unsatisfactory business to patch old shingle roofs with roof paint of any kind. Better put on a new roof at once.

Flax.—"T. G. A.," Nemaha Co., Kansas. Flax may be made a very profitable crop upon rich bottom land if proper care is given to it. The soil must be very clean and free from weeds. If grown for seed only a bushel should be sown per acre, as the thinner the crop the more the plant spreads, and the larger and better the crop of seed. A fair yield is twelve to eighteen bushels of seed per acre. It should be sown early, or about the time of sowing oats.

The Peach Prospects.—Knowing the desire of both producers and consumers of peaches to have the earliest reliable intelligence from the great peach center, we have requested a gentleman who has unusual facilities for procuring information to keep us advised of the prospects. The following is the outlook up to the time of our going to press—April 15th:—I am in almost daily communication with prominent fruit raisers in all parts of the great peach-growing districts of Maryland and Delaware. The reports are somewhat conflicting as to Delaware. In the lower part of Kent and Sussex counties the trees have been in full bloom for some days, as they also have in the following counties in Maryland, all large peach-growing districts—Queen Anne's, Caroline, Talbot, Dorchester, Worcester, Somerset and Wicomico. These are the southern counties on the eastern shore; but few peaches raised on the western shore. The prospect in the above named counties, the most southern part of the peach districts, is only fair, as we have had much cold weather, with ice, sleet, and several severe frosts, seriously affecting the crop in the inland orchards. Those orchards located on

or near our bays, rivers, or inlets, are not affected so much by frost and sleet. Notwithstanding all this, the prospect is that there will be an immense crop of fruit shipped from those districts the coming season. In the upper part of Kent and New Castle counties, Del., the upper part of Queen Anne's, Kent, and Cecil counties, Md., the trees are not yet in bloom, and the prospect was never better for an immense crop of peaches. The question now among our people is to know what to do with the fruit if the crop should prove as large as the present prospect would indicate. Already capitalists are on the move, and canning houses and Alden drying establishments are springing up all over the country, and with all these increased facilities, if the present prospect holds good, peaches will be thrown on the market in such quantities this season that the prices will rule low, and nothing but prime fruit be worth shipping. While there may be failures in some localities, the prospect, on the whole, was never better for a great crop. The prospect for small fruit crops is good. Eight years ago we did not ship one car-load of berries a day; in 1873 we shipped on the Delaware railroad as high as sixty-five car-loads of strawberries a day.

Books Noticed.

Our publishing friends must excuse us. In the spring months we are so crowded with purely agricultural matters that we have been unable to acknowledge their favors. We can only give the briefest mention.

FIELD ORNITHOLOGY, Comprising a Manual of Instruction for Procuring, Preparing, and Preserving Birds, and a Check List of North American Birds, by Dr. Elliott Coues, U. S. A., Salem, Naturalists' Agency. This title is so descriptive that little need be added to indicate the contents of the work. It is by one of the best of our practical ornithologists, and written in such a plain and direct style, and withal so full and complete, that it makes just the work needed by both young and old ornithologists. Price $2.50.

PLEASANT TALK ABOUT FRUITS, FLOWERS, AND FARMING, by Henry Ward Beecher. New York: J. B. Ford & Co. The publishers do well to issue a new edition of these "Talks," most fitly called "pleasant." There are a few additions to the first edition, which we well recollect as one of the most charming books we ever read. Mr. Beecher's writings, speaking horticulturally, are not only perennial, but evergreen, and are just as good in 1874 as they were in 1859. The author has the advantage over many who write about horticulture in possessing the not common qualification of knowing something of his subject. These articles are not only bright and cheery, but practical and sensible—in other words, they are Beechery.

JENNY JUNE'S AMERICAN COOK BOOK, by Mrs. J. C. Croly, N. Y. American News Co. The author of this work is well known in literary circles, and her name would predispose one in its favor. Unfortunately a cook book can not be fairly judged by merely reading it; as with a servant one must try it in the kitchen in many ways before deciding upon its value. The lady who presides over the writer's culinary matters says the book "seems promising," and this confirms our own impression. The general directions are marked by eminent good sense.

FLOWER OBJECT LESSONS, or First Lessons in Botany, a familiar description of a few flowers, from the French of M. E. Le Maout. This is a portion of a work by a well-known French author, translated by Miss A. L. Page, Danvers, Mass. With a good teacher this book may be of use in the lack of a better, but notwithstanding the "testimonials" printed with it we think it a very indifferent work. One of its claims is that "not a technical word is used," which strikes us as of no advantage, as common words are strained out of their meaning and applied to things which have "technical" names and no other. If we wish a child in the garden to bring a rake, we do not call it "a piece of iron to which teeth are fixed at right angles, and furnished with a handle," but make the child learn that the proper name for the thing is rake. Yet this circumlocution would be no more nonsensical than the "powder wands" of this book applied to stamens. The fact is that these bodies are peculiar, and they occur only in flowers, and their proper name is stamens, which is just as easy to learn, being but one word, as "powder wands," two words incorrectly applied, and which the child will very soon have to unlearn; many stamens, as it will soon find out, have nothing "wand"-like about them, and much pollen is not powder. Equally absurd is it to call the pistil "column" and "central organ." We are heartily in favor of making the study of plants plain and attractive to children, as has been done by Dr. Gray and Miss Youmans, and which has been attempted without very great success in this book.

EASY LESSONS IN NATURAL SCIENCE, by R. E. Kremer. Philadelphia: Claxton, Remsen & Haffelfinger. What real use this book can serve we are unable to see. It may help one of those stupidities that an inscrutable Providence sometimes allows to stand in the place of a teacher to cram a child's head with fragmentary, disjointed, and useless answers to equally fragmentary and useless questions, to be repeated without any more knowledge of the subject than a parrot. We could fill a page with the absurdities of this book, but a few examples must suffice. Under "Salt" we find "What is common salt?" *Ans.*—"It is a substance used for seasoning or preserving meats, vegetables, butter, and other articles of diet;" and this is all that the child is taught as to what salt really is. Under "Apple" it is asked, "How many varieties are known?" *Ans.*—"Over two hundred." We can not see that this is an important part of a child's education, but as the book professes to teach science, it should approach accuracy. The fact is that one American book describes over two thousand, and does not include all the varieties known. The "vegetable kingdom" is disposed of in just one page, and how full of wisdom that page is may be seen from this: "What great naturalist prepared the system of Botany which is now in use?" Behold the answer!—"Linnæus of Sweden"!!! Mr. Kremer, we would advise you to cram yourself better before you attempt to teach children matters about which you appear to know absolutely nothing. Your book is Bosh.

THE CARPENTER'S AND BUILDER'S ASSISTANT, by Lucius D. Gould. New York: A. J. Bicknell & Co. This is a very concise treatise upon the principles of carpentery, and includes with others the now popular system of balloon framing. The illustrations are exceedingly neat, and the descriptions though brief are clear, and the work can not fail to be of great use to the carpenter who wishes to work by rule.

Catalogues Received.

Our friends who come so late must be content with a very brief acknowledgment of their catalogues, as we have not space for more.

SEEDS.

J. H. & W. E. CONE, Hartford, Ct., with their catalogue of Wethersfield seeds, give a farmers' almanac.

A. S. JOHNSON, North Chili, Munroe Co., N. Y.—Seed Potatoes a specialty.

W. B. DIMON, JR., Brooklyn, N. Y.—Vegetable and Flower seeds.

MILLER & SIEVERS, San Francisco, Cal.—Californian and Australian Tree and Flower Seeds.

H. W. WILLIAMS & SONS, Batavia, Kane Co., Ill.—Flower and Vegetable seed catalogue and a Potato circular. Also Greenhouse and Bedding Plants.

JORDAN HORTICULTURAL COMPANY, St. Louis, Mo.—General Stock of Seeds, Florists and other Plants, and Horticultural Goods.

NURSERIES.

L. B. CHAPMAN, Portland, Me., and 145 Fulton st., N. Y.—Small Evergreens a specialty.

J. & W. J. JUDEFIND, Edesville, Kent Co., Md.—Amazon Raspberry a specialty.

J. W. MANNING, Reading, Mass.—Fruit and Ornamental.

FRANK FORD, Ravenna, O.—Hoosac Thornless Raspberry a specialty.

THOMAS MEEHAN, Germantown, Pa. — Ornamental Trees and Hedge Plants especially.

JONATHAN A. HOLMES, Polo, Ogle Co., Ill.—Apples and Small Fruits.

CALKINS & BROOKS, Bricksburgh, N. J.—Peach and other fruits.

A. D. PRYAL, Oakland, Cal.—General Nursery and Greenhouse stock.

E. Y. TEAS & Co., Cascade Nursery, Richmond, Ind.—Fruit and Ornamental, with extensive Greenhouse stock. Roses a specialty.

PINNEY & Co., Sturgeon Bay, Wis.—Manual of Evergreen and Forest Trees, accompanied by a Catalogue of the same.

FLORISTS.

B. P. CRITCHELL, Cincinnati, O.—A very full catalogue.

THOMAS MEEHAN, Germantown, Pa., has added extensive greenhouses to his nursery, and has a full stock.

A. WHITCOMB, Lawrence, Kansas.—This is a charmingly neat catalogue.

WM. H. PAGE (Wm. B. Hovey, Agent), Norwich, Ct.—Flowers & Vegetable Plants.

W. B. DIMON, JR., Brooklyn, N. Y., sends with his catalogue a fine little chromo.

MARION WELSH, Mt. Vernon, O.—Vegetable Plants and Hardy Shrubs, in addition to a full florists' stock.

GEO. W. PENNEY, Newark, O.—Vegetable Plants also.

A. HANCE & Son, Red Bank, N. J.—Bedding and Rare Plants.

H. P. CLOSSON, Thetford, Vt.—Bedding and Greenhouse Plants and Fruit Trees.

EUROPEAN CATALOGUES.

CH. HUBER & Co., Hyères, France.—Rare Plants, Palms, Cannas, etc.

ALEGATIERE, Lyons, France, offers several new double Pelargoniums and Carnations.

ANTHONY WATERER, Knap Hill Nursery, Woking, Surrey, Eng.—This nursery is celebrated for its Rhododendrons, Hollies, and other select plants, and has supplied the finest collections in this country.

F. K. BELL, Stratford upon Avon, Eng., sends a catalogue of his Imperishable Labels, which, from the locality we presume, he calls "Shakesperean."

J. B. GUILLOT FILS, Lyons, France. A catalogue of roses remarkable for its great number of novelties and standard varieties.

NOTE.—We have several duplicates of the catalogues of Anthony Waterer & Guillot Fils, which may be had upon inclosing a stamp to the editor.

IMPLEMENTS.

A. J. NELLIS & Co., Pittsburgh, Pa.—Harpoon Hay-Forks.

E. S. LEE & Co., Rochester, N. Y.—Pruning apparatus.

J. J. THOMAS & Co., Geneva, N. Y.—A catalogue setting forth the merits of the well-known Thomas Harrow.

Bee Notes.

BY M. QUINBY.

SOME OF THE OBJECTIONS TO BEE-KEEPING CONSIDERED.—It is well known how much honey is yielded by certain districts in the state of New York. Taking this as a basis and making proper allowance for waste land and other non-producing portions of the area, it is estimated that in this state alone twenty millions pounds of honey are annually wasted for the want of bees to gather it. At the present time instead of stating any arguments in favor of making an attempt to secure this important item in our resources by extending the knowledge and the practice of bee-keeping, it may be well to consider some of the objections that have been made to the pursuit.

Much has been said in opposition to bee-keeping, and said judiciously if it is not proved a legitimate and profitable business. Several writers in the newspapers are manifesting a good deal of interest from professedly disinterested motives. Early in March a little item appeared in the N. Y. Tribune, pretending to be a fair report of a bee-keepers' convention. I failed to discover wherein it was fairly represented. It seemed to me to be especially designed for the purpose of discouragement, by giving only the dark side. Was there nothing said that might have been some benefit? The name "bee merchants" was given to the members. Not more than two or three of the whole number ever bought and sold bees. One especially, that has secured more honey than any one in the state, never yet sold a bee. What constitutes a merchant but buying and selling? Is it just to represent the convention thus? There is about 100,000 pounds of honey sent to New York city annually. The man referred to has furnished about one fourth of it. Now suppose this man who knows how to manage bees successfully attends the convention and teaches his fellows how to manage until five or ten times the quantity is sent to market. The price it now bears would be lessened, and if he did not get his reward on a broader principle than pecuniary remuneration, I think he had better be silent. Where there is an interest, I hope there will be an impartial investigation.

Prof. C. V. Riley, of Mo., has had much to say against the bee. A private correspondent wishes to know what I "have to say to these charges." With regard to the injury bees do to fruit, it would be about the same in substance as was said last month. Prof. Riley seemed desirous to convince his readers that bees injured fruit without positively asserting it. Such words as "I am convinced" and "there is no doubt of it" may reach far enough to convince many readers that he has seen what he speaks of, when he has not committed himself to a positive expression. His proposition to poison the bees is one so repulsive that I abstain from any comment here. His plan to annihilate them by sowing milk-weed shows that he has not investigated the matter. My views on bees and milk-weed were given to the public over twenty years ago. I would not alter them now further than to say that the more that milk-weed was sown near my bees,

the more prosperous I should expect them to be. I have had opportunities of watching more closely since then where there were acres of milk-weed, and bees by the hundred colonies kept in the vicinity, which prospered as finely as any that could be found. The flowers of the weed have a peculiar shape, as well as an appendage that becomes detached and adheres to the foot of the bee, which becomes hooked to the flower when at work and held fast. But it will be found that not over one bee in a thousand is caught fast.

When we had the old box hive, and it was only part full, a few—a dozen bees or so—might be seen on the bottom board in the morning unable to get on the combs above them, because of this adherence to their feet. But very few of the whole number were disabled thus, as was proved by the quantity of these appendages that was worked off of the feet of those in the cluster overhead, that had ascended. Handfuls mixed with scales of wax might be scraped up, proving to me at least that only a small portion of the bees that work on milk-weed are lost. If it should be established that getting honey from the flowers of milk-weed did not kill the bees but was rather a benefit to them, the absurdity of the Prof.'s recommend to sow the weed is evident.

The injury bees are alleged to do to the flowers of fruit, grain, and grass, may be discussed another time. If the objections against bee-keeping are greater than the inducements to undertake it, of course it is better not to commence till these are removed. We think we have recently discovered means to lessen the danger from the dreaded stings, and if we can abandon fear and approach them with a desire to discover facts we shall progress in a ratio quadruple to anything we have done before.

Kentucky Blue-Grass.

BY THE HON. JOHN H. KLIPPART, COLUMBUS, O.

A paragraph appeared in the March number of the *American Agriculturist* from which one would be led to infer that this grass attained its greatest perfection only in a few counties in Kentucky, and that it required a limestone soil on which to flourish in any locality. The fact is that the limestone formation of the blue-grass region in Kentucky extends over Brown, Butler, Clermont, part of Clinton, part of Greene, all of Hamilton and Montgomery counties in Ohio; but for some reason the blue-grass does not seem to flourish so luxuriantly on the Ohio side of the lower silurian formation as it does on the Kentucky side. But in Union, Madison, Greene, Clarke, Fayette, Pickaway, Ross, Franklin, and Champaign counties, in Ohio, the blue-grass grows as luxuriantly and forms as staple a pasture grass as it does in Bourbon or Woodford counties in Kentucky. In the Ohio counties just enumerated the "drift" ranges from five to 150 feet deep; and in some of the counties this drift rests upon black shale, and in others upon the corniferous and Helderberg or Water-line limestone formations. How much influence the bedded limestone or shales lying beneath 150 feet of drift may or does exert upon the blue-grass growing on the top soil I am not prepared to state.

There is no grass which accommodates itself to any given locality with as much facility as does this same blue-grass—it is almost protean in the variations which it assumes according to climate and soil. We find it in southern and central Ohio growing rankly and luxuriantly on gravelly soils; then we find it equally rank on the bottom lands, and it does very well on stiff clay lands. It is the wayside pasture or June grass of Northern Ohio, but it does not do so well nor grow so luxuriantly there as on the gravel soils in southern Ohio.

A writer over the initials "J. L. C.," in an article on Kentucky blue-grass, says: "It is one of our earliest grasses, growing, with an upright round stem, from one to three feet high, with three or four long, rich, bluish green, highly nutritious leaves, with a perennial fibrous root, creeping near the surface." This is probably correct for northern Ohio, but in central or southern Ohio it differs somewhat. There are three or four leaves on the stem, it is true, from two to four inches long; but I have counted as many as thirty radical leaves belonging to one stalk, each leaf longer than the longest one on the stem. In these radical leaves is where the great merit of the plant lies. It is scarcely worth cultivating as a meadow grass or as a grass from which hay is to be made; the radical leaves are too short to mow, and the stems are unfit for hay, being very tough and wiry, so much so that as a matter of fact it is in some localities better known as wire-grass than by any other term. "J. L. C." warns persons not to grow it with clover, giving as a reason that "they are not fit to cut at the same time." If blue-grass is not sown with clover or oats, or some rapid-growing nurse, it will be many a long day before a "set" can be obtained. If sown by itself, the June or July sun will kill the tender plant down to the very roots—at least this has been my experience; but every time I sowed it with clover—and clover is the best nurse for it—I have succeeded in getting a good set. "J. L. C." says: "From the fact of its roots extending near the surface it is easily affected with drouth." Here in central and southern Ohio it resists drouth better than any grass we have. In Union and Madison counties are blue-grass pastures which have not been disturbed by the plow since the settlement of the country, and these undisturbed pastures are the most luxuriant and richest pastures we have. More than fifty years of constant grazing does not appear to have diminished the yield of pasturage. One field in Union county was plowed up some fifty years ago, and several crops of corn grown on it; then it was allowed to become a blue-grass pasture again, but up to to-day any one can see that it is inferior in its production of pasturage to the adjoining fields which were not disturbed by the plow. This is to me conclusive evidence that it is not any more exhaustive than any of the ordinary meadow or other pasture grasses.

A Pigeon Show.

The engraving upon the first page represents the principal prize birds at the first exhibition of the National Columbarian Society recently held in the city of New York. It may be supposed that pigeons are of very little practical use and are unworthy of the notice of persons whose efforts are turned towards producing something useful. But this would be a mistake if for no other reason than that one class of these birds, the carriers, possess a value for their services alone which in some cases can hardly be computed. In the late siege of Paris by the German armies, the mails were frequently carried by these birds, and letters or information either upon political, mercantile, or social affairs of incalculable value were safely sent by their means over the lines of the besiegers. A trained carrier pigeon might easily be the means of deciding the safety or destruction of an army, and thus change the destiny of a nation. Travellers or business men might send a rapid and inexpensive message from a distance or from their place of business to their home, by a carrier pigeon, which might be carried with them for this purpose in a small basket, and many hours of anxiety and suspense be thus prevented.

Besides as pets and ornamental birds they have their place in many a country house, to say nothing of their special adaptation to the purposes of the pie. We therefore give this prominent place to these portraits from life of probably the most valuable pigeons in the world; for it must be confessed that the birds sent from England for the purpose of exhibition here, as their best, were greatly surpassed by American birds. No. 4, the pigmy pouter, and No. 3, the bronze-wing, are two of these imported birds. They, however, arrived too late for entry and were not therefore in the competition. No. 2, the Antwerp carrier, is a new variety in this country and has already become very popular. These birds have not heretofore been figured; the specimen shown in the engraving is the property of Mr. P. C. Biegel. No. 1, the bald head tumbler, is owned by Mr. H. A. Brown, who entered the five varieties or colors of these birds, which are now almost extinct in America. He received a prize for each color. No. 6, the black swallow, is the property of Mr. T. S. Gaddess. No. 5, the red barb, owner H. Colell. No. 8, the black trumpeter, owned by T. S. Gaddess. No. 10, a pouter hen, a magnificent bird which took a prize of $50 and is valued at $250, is the property of J. Yeudall, Philadelphia. No. 7 is H. Colell's black fan tail; No. 13 is the black English carrier owned by P. C. Biegel; No. 12 the dark almond tumbler owned by A. Scheld; No. 11, the African owl, owner J. Yeudall; and No. 9, the yellow priest, owned by Mr. Gaddess.

Ogden Farm Papers.—No. 51.

Much has recently been written about large yields of butter, and an active discussion has been in progress on the subject in various agricultural papers. This discussion has revived what I wrote in the Ogden Farm Papers for August last concerning the dairy of Messrs. I. Boies & Son in Illinois. I have recently received a letter from them, in reply to a request for more information, in which they say:

"In our statement to you last spring we think we stated that we made about 300 lbs. of butter per year per cow. We thought so then, and we think so now. We have no means of knowing exactly how much we do make per cow, as we have never yet been able to give the matter a thorough trial. We are milking this winter 132 cows, 84 of which calved in September and October last, 48 having been milked from 12 to 18 months, it being impossible to get some of them with calf. In October last these 84 new milch cows gave an average of 28 lbs. per cow, or something over 2,350 lbs. total of milk, while on January 9th the same cows gave 26 lbs. per cow. The same cows are giving at present an average of 21 lbs. per cow. You will see that there is a great decrease from January 9th to the present time, a part of which is owing to our having to buy hay, and it is not so good as our own, as we take pains to have our hay cut very early. Every year since we have been in the dairy business our cows have given more milk in the middle of May and June than in the months of March and April. In the months of September and October last it took, September, 24 lbs. of milk to make a pound of butter, and October, 21 lbs. January, 23 lbs., and at present we are making from 23 lbs. Therefore, taking the months of May and June at the same average per cow that they are now giving, you will see that the average can not be far from 300 lbs. per cow. We think we can make 300 lbs. from a cow that comes in September 1st as we can 225 from one

that comes in March 1st—both to be milked until they go dry. We intend to weigh all our milk next year, commencing October 1st, and we are in hopes to prove that we can make as much per cow (and as good butter) in Illinois as can be done in the old dairy regions at the East. Our neighbor, Mr. O. S. Tamner, bought 40 cows in the spring of 1873, commenced delivering milk March 1st, and in one year he delivered us 7,212 lbs. of milk per cow, his cows going farrow however."

In their former letter these gentlemen state that they feed their cows "eight quarts of corn and oat-meal (mixed) per day for every day that they give milk. In winter we give them every day, in addition to the meal, a large load of corn in the shuck, also what nice early cut hay they will consume."

The foregoing is a very explicit and exact statement, and there is no reason to question its accuracy.

Supposing the 84 fresh cows to produce, as is stated, from October 1st to April 1st, 4,550 lbs. of milk, yielding about 198 lbs. of butter, we need not strain the point very far to credit them with 102 lbs. for the other half of the year, when they would be mainly at grass, and would each have eight quarts of rich grain feed per day in addition. Mr. Tamner's 40 cows, being left farrow and fattened for the butcher, produced, according to the statement (at 23 lbs. milk for one pound butter), an average of 313 lbs. of butter within one year.

Such a forcing system of feeding is of course hard on the cows. More than one third of the Boies cows failed to get with calf, and with the Tamner cows there was no effort to get them with calf. This process of butter and beef making is closed to those who raise their own stock, but even these may take a hint (to be followed with judgment) from the mode of feeding described.

And what feeding it is! "What nice early-cut hay they will eat" (and hay so good that when purchased hay is fed the cows fall off materially in their yield); eight quarts of oats and corn-meal per day; and a large load of corn in the husk, which must amount to at least 10 lbs. of shelled corn per day for each cow—considerably over a peck of grain per day! No wonder they give large yields of butter and come out at the end of the year beef fat.

There is, too, much more than a hint for Western farmers, who are now groaning under the oppressive charges for the transportation of their corn to the sea-board markets. Why send it at all, you who can feed it at home? Why not make butter or cheese, and from the refuse of the food, and from the skimmed milk and whey make pork, and so put your gross product into a net form? You will get as much for the dairy products and the pork as you would for the corn from which they are made, and will save the cost of transportation on the greater part of your crop.

You will save something else, too—the enormous amount of valuable manure which your corn now makes here at the East and in England. The day has fortunately gone by when an agricultural writer need hazard anything of his reputation by asserting that in Illinois, as well as in all the rest of the world (old or new), the manure question is henceforth to be *the* question, and that a universal recognition of the value of manure among Western farmers is of the greatest importance to the permanent interests of the country, which depend so much on Western prosperity.

A friend in Maine, writing to congratulate me on the results of my dairying as set forth in the March number, says: "I observe with surprise the large percentage of abortions in your herd—seven out of thirty—and you make no allusion to it as an unusual occurrence. It would be considered so here, and in fact a single abortion is unusual in all this region. In my own herd, varying from twelve to twenty, there has not been an abortion for many years. Is it common with you and in your vicinity, and to what cause is it attributable? If the cause is not certainly known, what are the speculations on the subject?"

Abortion has been common here, but fortunately it is decreasing, and seems to have left my own herd altogether. The speculations on the subject, so far as they have come to my notice, seem to be of no value whatever, and, after the costly investigations that have been bestowed upon it during the past few years, there has been no theory developed which seems to fit the conditions under which it occurs; neither has any effective preventive been suggested, unless it be the one prescribed by Mr. Sam. J. Sharpless, and published some time ago in these papers, and which is worth repeating.

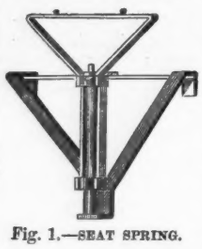


Fig. 1.—SEAT SPRING.

It is this: Abortion is accompanied by, whether caused by or not, a rather low condition of vitality, and it seems to be arrested by stimulation of the digestive organs — by tonics. The form of tonic that we have used, and which we think has been effective, is a powder consisting of: 2 oz. suphate of iron, powdered; 8 oz. ground ginger; 8 oz. fenugreek; 8 oz. caraway; 4 oz. gentian. Dose: A heaping tea-spoonful daily with bran or other feed.

Mr. Sharpless gives this to his whole herd, and during much of the season of pregnancy. We have used it much more sparingly, but with apparent good results. If a cow shows by the swelling of the bearing, by the laxity of the cords at the side of the tail, or by a tendency to spring-bag, that she may be preparing to lose her fœtus, we separate her from the herd, give her the powder at once, and give her somewhat stronger food. In every case where we have tried this, for a year past, the indications have disappeared, and the cow has gone regularly on with her pregnancy. The cases have seemed clear enough to show that the powder does good, but it is possible that the epidemic (according to its habit) had run itself out and disappeared of its own accord—as mysteriously as it came.

Fig. 2.—SEAT ATTACHED TO BOX.

There is abundant indication of the fact that a change is coming over the minds of dairy farmers on the subject of Jersey cattle. In spite of hard times, farmers are making active inquiries about them, and actual sales are increasing every year in numbers and in price. A few years ago bull calves could be bought in plenty for $25 each at six months old, and for not much more at twice that age. The price now runs for good animals at from $50 to $100. I am not now speaking of the demand from breeders of thorough-breds, who pay even as high as $300 for young bulls of unmistakable pedigree and quality, but of that from dairy farmers. I have recently sent two bulls into New York State, one for $75 and the other for $100 (express charges being in each case about $30), both sold to dairy farmers in districts where Jersey cows are almost unknown, and where they are to be used only on native cattle and for the improvement of the herds of butter-producing farms. For another, which I advertised at $50, I had seven applications within two weeks. Three years ago I should not have had probably a single one. The meaning of this is that butter-makers are awakening to the knowledge that the superiority of the Jersey breed for the butter dairy is an established fact—not a mere fancy of rich men running after a fashion. It has been sufficiently demonstrated that an infusion of Jersey blood into a herd of native cows will materially increase their product of butter, and will make it easier of manufacture and better in quality. This it does without increasing the size of the cows, and without, therefore, causing a greater consumption of food. Such being the fact, it is not at all to be wondered at that intelligent dairymen who are awake to their true interests should be quick to find it out and be anxious to take advantage of the proffered benefit. The good that is to be done to the country by the dissemination of Jersey bulls to be used for the improvement of common cows is of far more consequence than is that of the extension of the use of pure Jersey cows, for the reason that this latter will, at least for a long time to come, be confined to a comparatively few of the better farmers, while one bull in a neighborhood will make a lasting amelioration of all the well kept herds for miles around. This is an improvement, too, which is sure to extend and increase the more the sterling qualities of this race become known, and it must lead eventually to the wide extension of the pure Jersey cow, which stands in relation to the half-breed as gold does to silver.

An Easy Wagon-Seat.

It is somewhat difficult to adapt a convenient spring-seat to an ordinary wagon with the appliances generally at a farmer's hand. We have, however, recently been shown a spring-seat which seems to combine all the requisites of convenience, portability, ease, and cheapness, which would make it desirable for a farmer to possess it. It is shown in the annexed engraving. Fig. 1 shows the spring to which the seat is attached. The spring, a strong spiral steel one, is contained in a strong but light wrought iron frame. The frame is provided with two hooks, by which it rests upon the edge of the wagon-box—outside of it and out of the way of a load—and is so made that it may be slid along with ease from one part of the box to another. The seat is bolted to the upper part, in which there are two holes made for this purpose. Fig. 2 shows the seat complete, affixed to a wagon-box. This seat is patented, and is made by B. F. Wells of No. 47 Dey street, New York.

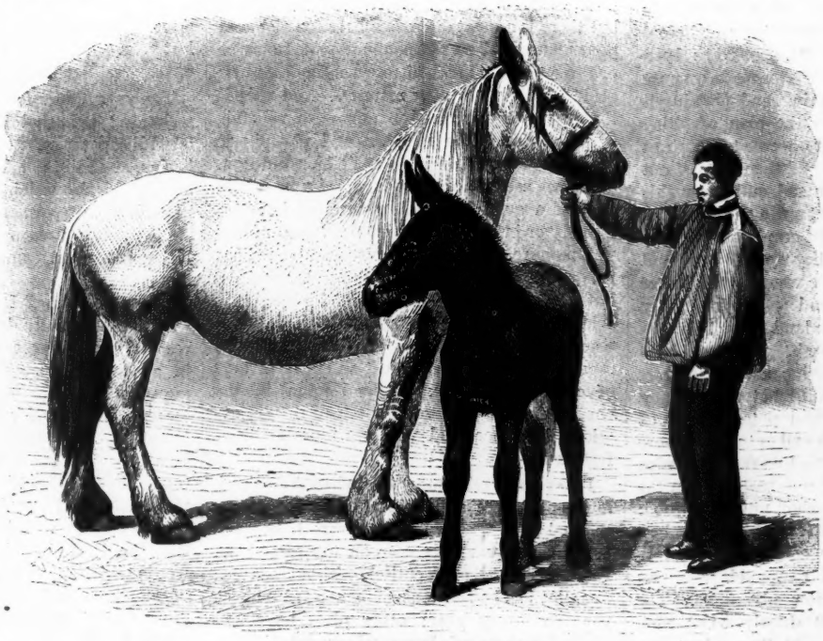
The Wild Ass.

Although we rarely find an ass engaged in farm labor, yet indirectly this much maligned animal is of agricultural interest and value. As the sire of the mule he renders an invaluable service, and anything new pertaining to his history is worthy of record. By reason of many sorrows and misfortunes and much ill-usage the ordinary ass has lost much of its original spirit and beauty, and it is difficult to recognize in the graceful animal depicted in the annexed engraving (for which and that of the Poitou Mare we are indebted to the London Field) a creature which we might designate as a pure-bred donkey, a true descendant of the original race. The engraving is a portrait taken from a photograph of a young wild ass, a female, which was recently captured after a chase of forty miles, which was made in 3 hours and 5 minutes, upon the Runn of Kutch by an English army officer and a party of fifty native hunters. The district in which it was captured is a vast grassy plain, much resembling our own Western plains, in Tartary, and is the native home of the wild ass. These animals are very shy and fleet, and being possessed of great endurance are rarely captured. This is the second instance only of a capture, the first being that of a mare heavy with foal, which was taken after having been wounded, and this, being a young animal only six months old, was only taken after having been disabled by a wound from a spear. A remount of horses also was necessary to make the capture. This proves the native endurance of the race and tends to explain also the fact that our domestic ass so well survives the greatest ill-usage, the most severe labor, the poorest and most scanty fare, that his longevity and freedom from disease have become proverbial. It is a fact worthy of notice that the wild ass (*Equus onager*) is colored differently from its domesticated relative. The animal here shown is white and fawn; the under parts of the body, the neck, chest, and nose, part of the face, the rump, channel, and inside of the legs are white; the mane is short, thick, and dark brown. A dark dun streak of long hair runs along the back, widening towards the rear, and continues down the tail to the end. The rest of the body is of a fawn color; the coat is smooth and glossy, and the tail has a tuft of long dark-brown hair at the end. The legs are clean and flat, the sinews prominent, the feet are small, hard, and well formed, and the pasterns long. The ears are smaller than those of the tame ass, and are constantly pricked, and the eye is of unusual brightness and quite black. The muzzle is small and black, with large open nostrils. This animal does not have the cross upon the shoulders, which is borne by the domestic ass, and is 12 hands high, although now only a year old. As this wild ass is probably the original of our domestic one, it is a curious problem to trace out the causes which have led to the variation between it and the races that have descended from it.

A WILD TARTARIAN ASS.

The Poitou Mare and Mule Foal.

We have previously described and illustrated the Poitou Mule, and now complete its history by describing the typical dam from which it is bred. Indeed this part of its history is of considerable importance in a national sense. As a large number of these animals are annually imported into this country, it becomes a matter of interest to know if we can not just as well raise the animals we need ourselves, as pay the foreign breeders for doing us this service, and so have this industry added to those we already possess. As in a family everything made at home, in leisure hours, saves expenditure and adds to the wealth of the household, so in a nation everything that is produced, if it does not interfere with other productive labor, also adds to the general wealth. It is quite plain to us that we need not go to France for such mares as this, and equally so that thousands of mules may be raised in several of our States without hindering any profitable work. If, then, we use the mares we have and devote attention to this business, all we need is to import the necessary animals to start with, and set this industry to work for ourselves. It is questionable, indeed, if we do not already possess equally good animals with the French breeders, and if we could not by using the same care as they do in selecting sires and dams produce equally good mules. We have little doubt of it, and knowing what has been done by our breeders in other respects, and the great success they have attained, it would be strange indeed if they could not produce exactly the kind of mule needed for every purpose, and render importation unnecessary. It will be seen from the engraving and the following description of the Poitou mares that we have already the material for a home supply. The engraving represents a prize Poitou mare, and a mule foal three months old. The mare is 16 hands high, coarse in bone and heavy in build, and very much resembles the horses common in Normandy, some of which have been brought to this country under the misapplied name of Percheron. Indeed, many mares have been taken directly from Normandy for mule breeders (*mulassières*), although both stallions and mares are now brought from England to supply a stock of dams. These dams are rarely used to labor, but are kept almost altogether for breeding. Generally they have colts when three years old, and the idea of the French breeders that very low keep upon straw and similar innutritious food is favorable to the process of gestation, and the safe production of the colt does not tend to improve their appearance, although it may be effective for the purpose designed. Certainly the pampering of breeding animals is neither productive of prolificacy or hardiness in the dam, nor hardiness in the offspring; but on the other hand there is a judicious mean



A POITOU MARE AND MULE FOAL.

which is not wisely departed from. The young mule inherits the heavy limbs of the dam and its size, as also to some extent its coarseness; the capacity for draft being the great object to be attained. On the whole the French system of raising these mules is contrary to what we should consider as exactly proper, and it is quite possible that in a very short period we could surpass them in the character of the animals raised. For instance, the young foal is denied the first milk of the dam, and this frequently results in its injury or early death. Then as soon as the colts are weaned they are sold to farmers, who rear them until yearlings, when they are sold again and again to others who keep only mules of two, three, or four years, as the case may be, until finally they are sold to the foreign purchasers. A more enlightened treatment of the mules could not fail to be of service to them, and it is hardly questionable but that American bred mules would be superior to the imported ones.

Walks and Talks on the Farm.—No. 125.

Mr. S. R. Elder, of Beaver Co., Pa., writes me an interesting letter. "Corn is our surest crop," he says, "and always follows a manured clover sod. We usually get about 70 bushels shelled corn per acre. The next spring we sow oats on the corn stubble. And here our trouble commences. The oats fall down and do not fill, and taking one season with another we do not get more than 35 bushels per acre. I once sowed five acres of oats and peas. They had a splendid appearance when in bloom, but fell down and rolled before they showed any signs of ripening. Now, can you suggest any crop to take the place of the oats and leave the land in good condition for winter wheat?"

In this section wheat does better after barley than after oats. I should try plaster or salt to see if it would not give stiffer oat straw. Sow 200 lbs. broadcast per acre after the land is plowed and harrowed in the spring and before the seed is drilled in. If Mr. Elder has been in the habit of drawing his winter-made manure on to his sod land in spring, and plowing it under for corn, I would try the plan of piling the manure and turning it once or twice so as to thoroughly ferment it, and then draw it out in the fall on to the clover sod and plow this clover sod up for corn next spring. I think the oats that followed this corn crop would not be so likely to fall down as they would be on land where coarse, fresh manure was plowed under for corn. I think oats and wheat frequently fall down, not because the land is too rich, but because it is not rich enough. The trouble is probably due to an excessive amount of carbonaceous matter in the soil, and to a deficiency of nitrogen, phosphates, and potash. One of the best remedies for this evil is to grow more root crops. A crop of mangel-wurzel or turnips will take up this carbonaceous matter from the soil and organize it into good nutritious food.

But it is not an easy matter to hit on the best rotation of crops. If we could only get reliable artificial manures at reasonable rates we could farm to much better advantage. The time will come, and that shortly, when such will be the case. We could then adopt any rotation that best suited our particular circumstances. The old notion that there is any real chemical necessity for a rotation of crops is unfounded. Wheat can be grown after wheat, and barley after barley, and corn after corn, provided we use the necessary manures and get the soil clean and in the right mechanical condition.

"What, then, do we gain by a rotation?" asked the Deacon.

Much every way. A good rotation enables us to clean the land. We can put in different crops at different seasons.

"So we could," broke in the Deacon, "if we sowed wheat after wheat, barley after barley, and corn after corn."

True, but if we sowed winter wheat after winter wheat there would not be time enough to clear the land.

"Just as much as when we sow wheat after oats, or peas, or barley."

"True again, Deacon," I replied, "but we are supposed to have cleaned the land while it was in corn the previous year. I say supposed, because in point of fact one half our farmers do not half clean their land while it is in corn. It is the weak spot in our agriculture. If our land was as clean as it should be to start with, there is no rotation so convenient in this section as corn the first year, barley, peas, or oats the second year, followed by winter wheat seeded down. But to carry out this rotation to the best advantage we need artificial manures."

"But will they pay?" asks the Deacon.

"They will pay well provided we can get them at a fair price and get fair prices for our produce. If we could get a good superphosphate made from Charleston phosphates for 1½ cent per lb., and nitrate of soda for 4 cents per lb., and the German potash salts for ¾ cent per lb., and could get on the average $1.25 per bushel for barley and $1.75 for good white wheat we could use these manures to great advantage."

"Nothing like barn-yard manure," says the Deacon.

No doubt on that point, provided it is good manure. Barn-yard manure, whether rich or poor, contains all the elements of plant-food, but there is a great difference between rich and poor manure. The rich manure contains twice or three times as much nitrogen and phosphoric acid as ordinary or poor manure. And this is the reason why artificial manures are valuable in proportion to the nitrogen and phosphoric acid that they contain in an available condition. When we use two or three hundred pounds per acre of a good artificial manure we in effect, directly or indirectly, convert poor manure into rich manure. There is manure in our soil, but it is poor. There is manure in our barn-yards, but it is poor also. Nitrogen and phosphoric acid will make these manures rich. This is the reason why a few pounds of a good artificial manure will produce as great an effect as tons of common manure. Depend upon it, the coming farmer will avail himself of the discoveries of science, and will use more artificial fertilizers.

I have several times alluded to the experiments of Lawes and Gilbert on barley, giving the main facts. For twenty years barley has been grown year after year on the same land. One plot has been left entirely without manure; one plot has had 14 tons of barn-yard manure per acre every year; other plots have had superphosphate of lime; others sulphate of potash, soda, and magnesia, with and without superphosphate. On other plots, nitrate of soda and salts of ammonia have been used, alone, and in connection with superphosphate, and also in connection with salts of potash, soda, and magnesia. One plot had 2,000 lbs. of rape cake each year per acre, alone, and also in connection with superphosphate, alone, and in connection also with potash, soda, and magnesia alone, and with superphosphate added. The results of the experiments for twenty years have recently been published. They show that we have much to learn—and, what is equally important, a good deal to unlearn. They are, however, on the whole, decidedly encouraging. They show that great crops can be raised, and that it is well worth a farmer's while to study agricultural chemistry.

The crop on the plot that was sown to barley every year for twenty years without manure produced an average of 23 of our bushels per acre and over 1,300 lbs. of straw. This, in itself, is a striking result.

"It must be very rich land," remarks the Deacon.

"No," I replied, "it is no richer land than yours or mine. It is what we should call a rather heavy wheat soil. It is some such land as my north lot, but I think not naturally as rich."

"When you sowed barley in that field, if I remember right," unkindly remarked the Deacon, "you did not get over 15 bushels per acre."

This was not because the land was poor. It was because it had never been more than half plowed and worked, and was full of weeds.

The plot that was manured every year with barn-yard manure averaged 54¼ bushels per acre and over 1½ ton of straw. The smallest yield on this plot during the twenty years was 34¼ bushels per acre, and the largest yield 65 bushels.

The smallest yield during the twenty years on two plots which received nothing but the best artificial manures was 33¼ bushels per acre on the one plot and 39¼ bushels on the other. The largest yield on these two plots was 71½ bushels per acre on the one and 73¼ bushels on the other.

"That will do," says the Deacon, "but after all it is not as big a crop as your oats and peas last year. You had 85½ bushels per acre, without any artificial manures."

The year before I had 88½ bushels by weight, reckoning a bushel 32 lbs. This would be 2,832 lbs. per acre. Mr. Lawes's largest crop of barley, at 48 lbs. per bushel, was 3,540 lbs. per acre. This, by weight, is equal to over 110¼ bushels of oats per acre.

"I suppose," says the Deacon, "that Mr. Lawes had spent a small fortune in underdraining the land."

"It so happens," I replied, "that this field was not artificially drained at all. The only reason for such large crops was the application, in an available condition, of nitrogen and phosphoric acid. But recollect one thing, Deacon, it is vain for you or for me to hope to get big crops until we make our land clean. In a letter just published, Mr. Lawes, in alluding to the fact that nitrate of soda and superphosphate can be used with profit on the barley crop, well says: 'It is hardly necessary to add that the land should be clean; many of the weeds which infest our fields are quite as fond of ammonia and phosphate as are the grain crops, and if allowed to do so they will appropriate to themselves a very considerable portion of the manure."

The Deacon got up to go. I have only to speak of "weeds" to start him at any time.

"Don't be in a hurry," I said, "there are

several letters here that I want you to help me to answer. Here is one from Champaign, Ill., from a gentleman who wants to know how many pigs he can keep on an acre of clover."

"If the pigs have nothing but clover," said the Deacon, "they will eat nearly as much as one of your big Cotswold sheep. They keep eating all the time. But a good deal depends on the breed. And I will say one thing in favor of your black pigs. They are the best graziers I ever saw."

That is simply because they are so quiet and have little offal. Restlessness and offal, like weeds in a corn field, run away with half the food and all the profits. There are pigs that weigh no more in the fall after a summer's grazing than they did in the spring. The great advantage of having well-bred pigs is shown in the pasture lot more than in the pig-pen. I am not sure that a coarse, common, ill-bred hog that has nearly got his growth will not gain as fast after he is shut up to fatten as a well-bred Essex or Berkshire. But turn a couple of such pigs at say six months old into a good clover or pasture lot, and the well-bred pig will not only increase the more in weight, but this increase will consist in a good degree of good solid flesh and fat, while the increase of the other will be principally in bone, water, and offal.

A pig will eat more in proportion to live weight than any other domestic animal. Boussingault states that a pig from six to eight months old will eat green clover equal to over five pounds of hay per day. We shall not be far wrong in assuming that young clover contains 80 per cent of water, so that a pig would eat 25 lbs. of green clover per day—20 lbs. of which consists of water. If we assume that the pasture will produce in the season clover and grass equal to 2½ tons of hay, an acre would support five pigs for six months.

The Deacon thinks they would not eat so much clover if they were allowed one or two pounds of corn each per day. I think they would eat nearly or quite as much. In one of Mr. Lawes's experiments he gave one pen of pigs 28 lbs. of grain per head per week and all the bran they would eat; and to another pen only 19¼ lbs. of grain and all the bran they would eat. But the pigs having the smaller allowance of grain ate no more bran than the other. Both pens ate 18 lbs. of bran each pig per week. And so I think it would be with the clover. The pigs will eat about all the clover they can get into their stomachs, say 25 lbs. per day. But I think they would manage to squeeze in an extra pint of corn night and morning.

"But what is the good?" asked the Deacon.

Let Mr. Lawes's experiment alluded to above answer. The pen that had 18 lbs. of bran (all they would eat) and 19¼ lbs. of grain gained 4.16 lbs. per week; while the pen that had 18 lbs. of bran and 28 lbs. of grain gained 7.42 lbs. per week. In other words, 8¾ lbs. of extra grain per week produced 3¼ lbs. of pork.

The next letter is from a well-known agricultural writer in Ohio. He wants to know what is the best work on agricultural chemistry. I told him to get Prof. S. W. Johnson's works, "How Crops Grow" and "How Crops Feed." "I have not time to go at all deeply into the subject," he writes, "but I am convinced that there must be more science and more brains infused into our agriculture before there can be much improvement or even a check to the downward progress of our crops and the fertility of our soils."

I have not much fear of a "downward progress." I do not think our soils are being exhausted. I know my farm will produce a great deal more now than it would 25 years ago. Take the field where I am now sowing 14 acres of mangels. Twenty-three years ago it was in wheat. My father, who was a good English farmer, walked over the field with me, and exclaimed, "I never saw such a wretched crop; but it looks like good land." Last year I had a grand crop of corn on this same field. And yet about all I have done to it is to get out some of the stones, plow it better, cultivate thoroughly, and kill the weeds. I have plowed under no clover, have not put fifty loads of manure all told on the whole field until this spring. Now I am putting on eight or ten tons of manure per acre, and expect, with a favorable season, a fair crop of mangels.

"J. S. D.," of Bartholomew Co., Ind., asks "if Diehl wheat is an early or late variety? smooth or bearded? has it stiff straw, and is it suitable for the rich bottom lands of Indiana? Is it liable to be struck by rust or attacked by the fly? Is it a hardy winter wheat?"

It is early, not bearded, very stiff straw. With me it has escaped the midge and rust. Last year it was badly killed by the winter, but not more so than other varieties of white wheat. Mediterranean and other red wheats suffered less; so much so that many of our farmers did not sow white wheat last fall, but have gone back to the Mediterranean. The truth of the matter is just this. If your land is not dry enough or rich enough to produce twenty bushels of Mediterranean wheat per acre in a favorable season, it is useless to sow Diehl or any other choice white variety. But if your land is too rich for Mediterranean, and is dry and othewise in good order, try the Diehl. You will be likely to get a larger yield per acre and a higher price per bushel.

A farmer in Ohio writes: "I have just sold twenty-nine black-walnut trees to a man in New York for $600. My neighbors think it will hurt the sale of my farm. I look at it in a different light. That six hundred dollars will enable me to add many conveniences and some necessities. Such timber is too expensive to split into rails. Fully two thirds of the rails on the farm are black-walnut."

When a man does not wish to sell, what is the use of this constant talk about this or that thing helping or hindering the sale of the farm? If the black-walnut trees have got their growth, sell them and spend the money in making such improvements as will add to your own comfort and to the real value of the farm. To split up black-walnut trees into rails is about as sensible as it is to feed out clover seed to sheep or to plow it under for manure.

This same correspondent says he has "half an acre of mallows, or what the boys call cheeses. I cut it up six times last summer, and in the fall had a splendid crop. Will salt kill it?"

I think not. It is a wretched weed. I have been fighting it for years. It does not seem to fear the hoe. It must be pulled up by the root—which is easier said than done. During last winter we had such mild weather that the land could be plowed, and I struck the plow into a patch of land full of this weed and turned up the roots. All I can say at present is that they do not seem to like this treatment.

The next letter is from a farmer in Pennsylvania, who asks if it is better to fatten grade Cotswold lambs the first winter, or summer them over.

It depends on circumstances. Unless they are remarkably good lambs, and with more than one cross of Cotswold blood in them, I am inclined to think it will be better to keep them over. You get the wool, and it is not necessary to feed so much grain. They will make capital sheep the next winter or spring. When lambs are to be fattened the first winter it is necessary to have them come early, and to push them along rapidly through the summer and autumn; they ought to have some roots in winter.

"Is the Thomas harrow," asks "S. R. E.," "as good as claimed in corn working?"

It certainly kills a great many seedling weeds, and, so far as my experience goes, it does not pull up the corn to any serious extent. If the land is very hard it will not do much good, and if it is very light and rough it will smother some of the plants. Still, I think it a very useful implement, and one I should not like to dispense with. The only trouble I have had with it is with the couplings breaking or coming loose, and sometimes the harrows ride each other. I think the harrow might be improved in this respect. I ought to say that I have had my harrow some years, and it is very likely that this trouble has since been remedied.

A Butter Factory.

The factory system which has been so successful in the manufacture of cheese is equally adapted to the manufacture of butter. The creameries, as the butter factories are called, have made an excellent reputation in the butter markets, and "creamery pails" bring the highest current rates. Concentrated effort and capital are brought to bear in producing butter with the most complete economy and of the greatest possible excellence. The appliances necessary are in no way different from those belonging to any private dairy, except in capacity. The building needed is only an enlarged dairy house, and the principles upon which it is constructed are those upon which any dairy depends for its success. Still, as experience has been gained, there is found to be a style of building which is best suited for the purpose, and internal arrangements which are the most economical and convenient. Such a building is shown in the engravings. Fig. 2 gives the elevation of a successful factory in central New York. The building is 60 feet long, 30 feet wide, and 18 feet to the eaves. The basement or cellar is only partly below the surface of the ground, and is built of stone with hollow walls; the floor is paved with flagstone laid in cement. This secures a perfectly dry, cool, sweet cellar, with an equable temperature throughout the year. The building above the basement is of frame, boarded outside and lathed and plastered within. There is a covered drive-way at one end for delivering the milk, and a covered porch in the front with steps leading to the front door, and below the porch is the basement door. The floor of the factory consists of a milk-room 30 × 36, a work-room 22 × 14, a churning-room 8 × 14, with an engine-room attached. The plan is shown at

fig. 1. The milk-room contains twelve large pans each 10 ft. 10 in. long by 4 ft. 3 in. wide and 7 in. deep. They are what is known as the Jewett pan, which is made with a double bottom with a half-inch water space divided into

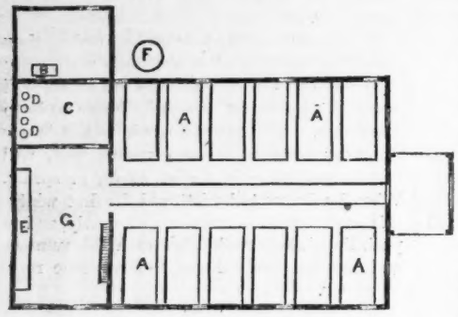


Fig. 1.—PLAN OF BUTTER FACTORY.

channels open and closed at alternate ends, so that the water which passes underneath the milk for the purpose of cooling it runs in a suddenly reversed current back and forth until it is discharged at the end opposite to that at which it enters. The entrance and discharge pipes are both raised above the level of the false bottom upon which the milk rests, so that the water space is always completely filled.

Fig. 2.—ELEVATION OF FACTORY.

The pan is a complete structure having no loose parts, and rests upon a wooden table. Figure 3 shows the form and arrangement of these pans. There are several other styles of pans in use in other factories, and some fac-

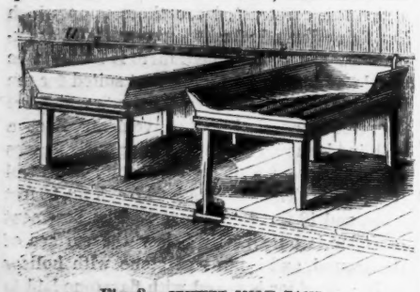


Fig. 3.—JEWETT MILK PANS.

tories practice the deep-can system, which has been frequently described in our columns. In the engraving (fig. 3) the pipe is shown at *a* by which the water is brought into the pans. It is brought from a spring near by at a temperature of 48°, and cools the milk to a temperature of 60° in the course of four hours. The milk-room is warmed to the same temperature in winter by means of steam pipes which pass through it. At *b* is seen the pipe which carries off the overflow of water from the pans, and which passes down by one of the legs of the table. A portion of the floor is removed to show this pipe. These pans shown at *A A*, fig. 1, are placed 20 inches apart upon each side of the room. A rail-track is laid in the center of the room between the pans, upon which a hand-car is run, which carries the milk from the receiving door. The milk is received into a weighing can, the can rests upon the car, which is higher than the pans, and the milk is run from the can directly into the pans. At *B* is the boiler and engine. The Anderson boiler is the one used and is eight-horse power. At *C* is the churning-room, in which common upright dash churns, *D, D*, are worked by steam power. The sink, 12 feet by 3 feet, is seen at *E*. At *F* is the sour milk tank, and at *G* is the work-room. The milk pans, *A, A*, contain 200 gallons each, or the milk of 100 cows at one milking; milk is received at this factory from 300 cows. The twelve pans and fixtures cost about $700, and the whole building with all the apparatus complete cost nearly $4,000. The upper story is used for the dwelling apartments of the superintendent, and the whole building is neatly painted outside and whitewashed inside. The perfect cleanliness and order usual in the best private dairies are to be provided for in any factory building, and such a location must be chosen as will secure purity of atmosphere, good drainage, and a central position amongst its patrons. The cost of making butter at this factory is three cents a pound, and twenty-eight pounds of milk upon the average are required for each pound of butter.

The ground plan of a private dairy of 75 cows, owned by Mr. P. D. Merriam, of West Port, N. Y., is shown in fig. 4. The milk-room, *A*, is 30 × 18 feet; *B* is the ice-water tank which supplies the pans, *C, C, C, C*, of the Jewett pattern, with cold water. These pans are 11 feet long by 3¼ in width. *D* is the churning room, 15 × 8 feet; *E*, the sour-milk room, is 8 × 5; *F* is the sour-milk tank; at *G* is the wash-room, 12 × 8, which contains a stove and scales; at *H* is the butter and cream room, 2 × 12; and at *I* the ice-house, 10 × 12. Mr. Merriam makes choice butter for the Boston market, and speaks very favorably of the large pans, for convenience, saving of labor, and larger yield of butter than in the small pans. He states that the saving of labor is one half, and the butter made with these pans is superior both in quality and quantity.

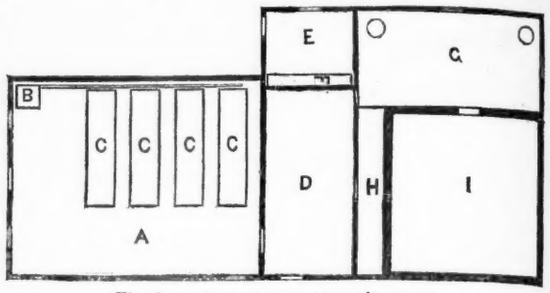


Fig. 4.—PLAN OF MR. MERRIAM'S DAIRY.

The Grubber.

Since the introduction of steam power in the cultivation of land a new system of plowing has come into use. The idea that when the term plowing is used the inverting of the soil as by the ordinary plow is meant, is no longer correct. A very large proportion of the steam plowing done in England and other countries at this time does not invert the soil at all, but merely pulverizes it. This operation is performed by what are known as grubbers. These implements, drawn by horses, have been in use for many years as aids to the plow in breaking up the subsoil and mellowing the surface soil, but have only recently been substituted for the common plow altogether. Now that it has been found that very satisfactory crops may be

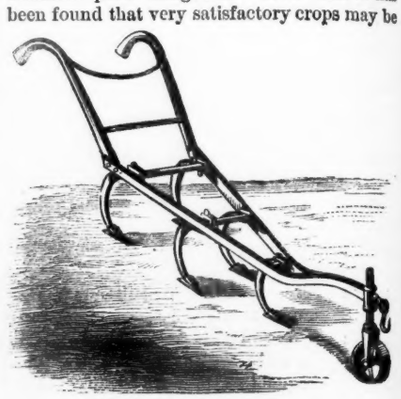


Fig. 1.—THE GRUBBER.

raised by the use of these implements upon stubbles or fallows, when operated by steam, they are coming into use in place of plows drawn by horses. No root crop is sown until the ground has been thoroughly worked with these implements. They are also coming into use in this country. One farmer of our acquaintance uses one to follow the plow, and breaks up the subsoil to a depth of twelve inches. His farm has a very light soil. Another uses one in preparing his land for potatoes and also in cultivating between the rows as soon as the plants appear above the ground. There are many other opportunities of making these implements useful. Fall-plowed land could be worked with one of them in the spring, instead of cross plowing, with great advantage and economy. They would entirely obviate the necessity for subsoil plows, as they would do the same work much more rapidly. They would prepare a corn stubble for a fall wheat crop much better than is now done by the surface harrowing common throughout the Western States, and would undoubtedly tend to increase the yield. As a cultivator to break up between the rows of corn or potatoes they

Fig. 2.—TOOTH.

would do the work in half the time of the plow. The annexed engravings show the forms of the teeth generally used and the smallest-sized grubber. Fig. 3 is a tooth intended to fit upon the bars of the frame by means of a key which passes through the bar, and to carry a winged share which penetrates and lifts and loosens the subsoil. Fig. 2 is a tooth which is clamped upon the frame by means of bolts, and simply stirs the soil. Fig. 1 shows the frame, which is similar to that of an ordinary cultivator, and to which either of the above forms of teeth may be affixed. We know of no person who makes these implements at the present time, but as the teeth are of wrought iron any fair blacksmith should be able to make them. The frame is made of timber strengthened by bolts. A farmer whom we visited some time ago was using a similar implement, the teeth of which were ordinary picks, and he expressed himself as being very much pleased with its effect, both in preparing for crops and cultivating them.

Fig. 3.—TOOTH.

How to Make Hurdles.

The picture in April of the "lamb creep" formed of hurdles has brought us several

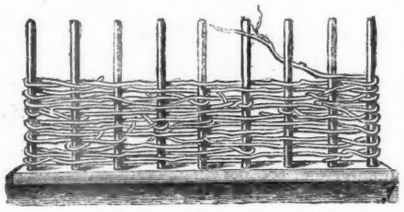


Fig. 1.—MAKING A HURDLE.

inquiries as to the best method of making the hurdles for portable fencing. For this purpose they are very useful, and as they are quickly and cheaply made and last, when taken care of, many years they are very economical. The material is generally such as is of little or no use for any other purpose. Brush from fence rows, swamps, river or creek banks, or the undergrowth of woods

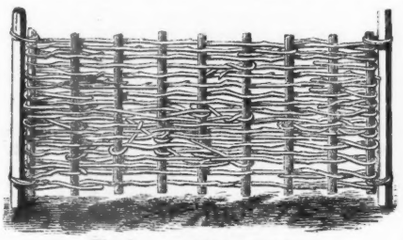
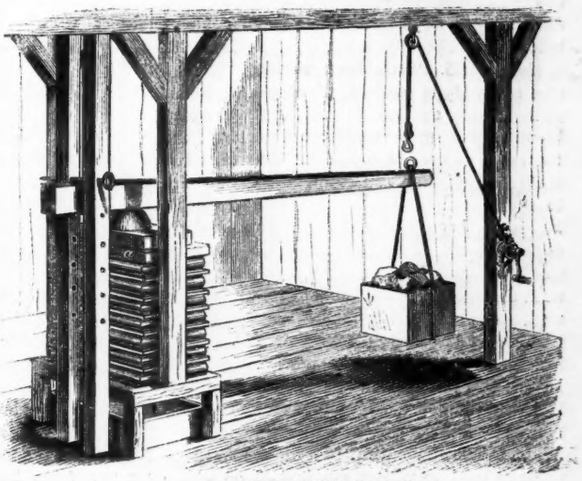


Fig. 2.—A HURDLE SET UP.

is what is wanted. The thicker portion of this is cut into stakes five feet long and trimmed of all branches. A piece of scantling 10 feet long is provided, and holes 18 or 24 inches apart are bored in it. The stakes are set upright in these holes, and while in this position the smaller brush is interwoven between them. Figure 1 shows the method in which this is done. When the hurdle is completed it is set up in the fence in the following manner. The stoutest of the stakes are reserved and pointed at each end. These are driven into the ground at such distances apart as may be needed, so that the hurdles may be fastened to them. Generally one at each end of the hurdle is sufficient, or another in the middle of each one may be used. The hurdles are then tied to the stakes by withes, cords, or wires. Holes are left in the hurdles at each end for this purpose. Figure 2 shows the method of setting up this fence.

A Lard-Oil Press.

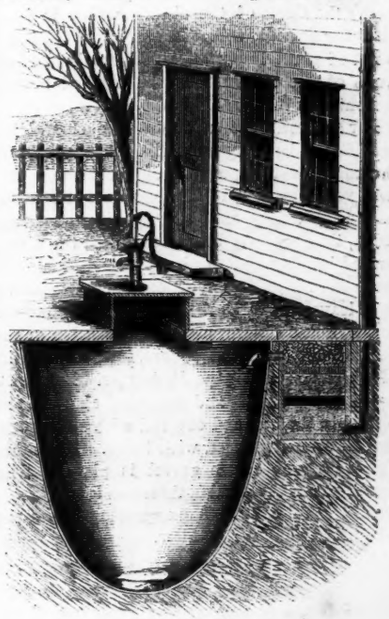
The home manufacture of lard oil is a process that may profitably be carried on under some circumstances. Those who may find it convenient to make their own lubricating or burning oil or manufacture it for sale may make use of the simple contrivance here described by "E. K. G.," of Holliston, Mass. It consists of a frame made by fitting two pieces of timber 4 × 6 inches thick from the floor to the roof or ceiling of an apartment at least 10 × 20 feet in size. Holes 1¼ inch in diameter are bored through the timbers 15 inches apart, and an iron bolt is made to fit them. A press bed is then made of plank three inches thick, 18 inches wide, and four feet long, with a gutter cut out all around it, which leads to a pipe that passes into a cistern below. The bed is placed in front of the upright pieces. Two other upright timbers 4 × 10 are placed upon the bed three feet apart and framed into it and fastened above. A guide one inch thick and two inches wide is fastened to the inside of each of these uprights, and a follower, shown at *a* in the engraving, is made to fit them. A lever 15 feet long and 4 inches thick, 10 inches wide at one end and 6 inches at the other, is made; and a hook affixed to the small end, on which a box may be hung to receive a burden of stone or other heavy material. The press is then ready for use. The lard is prepared by being packed in a box 10 inches square and 3 inches deep, in which a small sheet of strong cotton cloth has been laid. When the box is packed full of lard the cloth is folded over the top of it. The package of lard is then taken out and laid upon the press bed. More lard is prepared the same way, and the packs are placed in pairs, a piece of board being laid upon each pair. When enough has been prepared, a heavy follower which fits the guides is placed upon it, and a wooden saddle or rocker is put upon the follower, and the lever is then arranged so as to press upon the saddle. Weights are then placed in the box. The oil which is pressed from the lard runs down through the pipe into the tank beneath. As the lard is pressed down the pin at the end of the lever is lowered one or more holes as may be needed. The oil made in such a press in the winter time will be of the best quality.



A LARD-OIL PRESS.

An Underground Cistern.

A capacious cistern is next in value to a good well, and is better than a failing one. It may be constructed with but little labor, and the expense, as compared with its convenience, is small. If every western farm had a cistern at the barn and one near the house we should rarely see stock driven several miles each day through clouds of dust and in intolerable heat to get water, which, while it saves the lives of the animals, is in many cases unwholesome and unfit to drink, and is doubtless the cause of many deaths among stock. Frequently the cost of a cistern, which would be filled by one heavy spring rain and replenished by every shower afterward, would be saved during every month of a summer drouth. The sum of $40 would be sufficient to build such a cistern as is here described, 8 feet in diameter and 10 feet deep, which would hold 105 barrels, or 10½ barrels of water, or 375 gallons for every foot in depth. This quantity of water would supply a moderate number of stock for three months; at least it would give one barrel of



SECTION OF A CISTERN.

water a day for 100 days, even should no considerable shower fall within that time. If a larger supply were needed we would rather build several cisterns than one large one, as being more secure against accident. The most economical cistern, both as to cost and space, is a cylindrical one, that is, a round one with straight sides. In a clay soil such a one may be very safely made, but where the soil is

coarse, compact gravel, it is better to make it somewhat spreading at the sides, or bell-shaped, and similar to that in the engraving. The situation should be chosen in the most convenient place, as it is easier to lay a pipe to it than to carry water from it. The digging should be smoothly done, or there will be waste of cement in the plastering. When the whole is dug the cement may be prepared. This should be water lime or hydraulic cement. Our native Rosendale cement will answer the purpose very well, but if expense is no object, and the best work is desired, we would finish with a thin coating of imported Portland cement. This costs three times as much as Rosendale cement, being worth about $5 a barrel, while the other is about $1.75. The cement should be mixed dry, as evenly as possible, with seven times its bulk of clean, sharp sand. As it is needed it may be mixed with water upon the floor of the cistern, so as to become a soft mortar and be immediately spread. A flat stone large enough to stand upon, or several of them, should be laid in the bottom of the cistern, and bedded in the cement. Then the sides should be plastered at least an inch thick, or somewhat thicker at the bottom, in streaks all round the cistern, going regularly around in a spiral, taking care to make the joints very accurately, and leaving scratches to receive the finishing coat. In this way it is finished to the top. After it is done a light coat, with half as much sand as before, is laid over it and smoothly finished. When this is done a thin coat of pure cement, made as thick as whitewash, is laid on with a brush. A covering of joists and plank is laid over the top, and water may be run in at any time, the sooner the better. If any cracks appear before the water comes in they should be carefully filled with the cement wash by means of the brush. The accompanying engraving shows the shape of the cistern which is best fitted for gravelly soil. In stiff clay the shape is not of great importance. In sandy soil the walls of the cistern must be bricked before cementing.

For domestic use a waste shoe should be provided to be hung upon the lead spout from the roof, for the purpose of carrying off the first run of water, which is very apt to taste badly. After the roof and spouts are washed clean, the shoe may be removed and the water turned into the cistern pipe. It is well also to clean out the gutters occasionally and remove dead leaves and dirt. A filter should be attached to the house cistern, made of a wooden or cemented box, two feet square, into the bottom of which the lead pipe discharges. Layers of coarse gravel, sand and pounded charcoal are placed in the box and covered with a slate or a slab of cement pierced with holes. Upon this slab a layer of coarse gravel is placed. The water passes through all these and is freed from ill tastes and color. The engraving shows the manner of making the filter.

Ear-Marks for Stock.

There are various methods in use for marking and numbering animals so that they may be readily distinguished by the breeder. In a recent number of the London Field we find a system described which has been invented by a German breeder, Von Thaer. It consists in the use of three marks only, which may be so combined as to indicate very clearly any number up to 10,000. These marks are, first, a notch in the side of the ear; second, the tip of the ear cut squarely off, and third, a hole in the ear. Each mark has an arbitrary value which changes according to its position upon the ear, or either ear, and the sum of the values represents the number of the animal which bears the marks. A notch on the front of the left ear stands for 1, two such notches stand for 2; a back notch on the same ear stands for 3, two such notches stand for six; one notch in the back and one in the front of the left ear stand for 4, and combinations of these notches mark up to 9; a front notch upon the right ear marks 10, and a back or outside notch marks 30; combinations of these notches upon this ear mark up to 90, and with those upon the other ear up to 99; a notch upon the tip of the left ear marks 100, one upon the tip of the right ear 200, and these two together 300; a square cut, off from the tip of the left ear, is 400, and from the right ear marks 500; this last mark with the notch in the tip of the left ear marks 600; the tips cut square from both ears mark 900. Thus we have marks up to 999, and the third comes into use. This is a circular hole which, in the left ear, marks 1,000, and in the right ear marks 3,000. By combining these marks any number up to 10,000 may be represented. We append the following engravings of various marks, with the values represented by them. A simple pair of pincers, provided with the required cutters, is the only tool needed. A register of the stock of course will be kept in which the character of the animals will be recorded opposite their particular number. This system is well adapted in cases where stock is running at large and is in danger of tearing out the ear marks made by inserting rings or bands bearing letters or numbers. Where stock is carefully kept the Dana ear-marks here shown may be made very useful. Careful breeders find it quite necessary to be able to distinguish each individual of their herds. When a calf in a large herd is removed from its dam to be weaned, its identity becomes lost unless a mark is put into its ear. Upon the western plains the usual brands must give place to these metallic ear marks, at least for horned stock, while those previously described will serve admirably for sheep. The metallic ear marks, stamped with the owner's private brand, will be a readily distinguished mark; upon male animals they may be placed longitudinally in the ear, and upon females they may be placed crosswise, as shown in the accompanying figures.

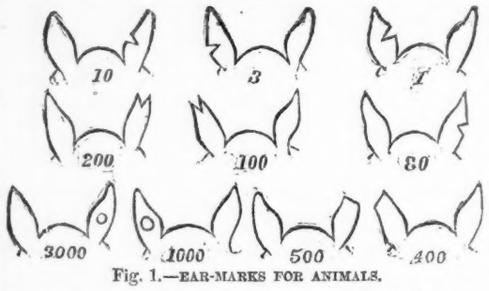


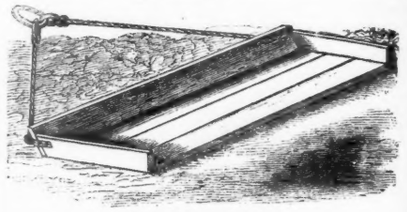
Fig. 1.—EAR-MARKS FOR ANIMALS.

Fig. 2.—EAR-MARKS FOR ANIMALS.

Fig. 3.—DANA'S EAR-MARKS.

A Smoothing Drag.

E. W. Greene, North Andover, Mass., sends us a sketch of a smoothing drag which is used extensively in his neighborhood instead of a roller. It is eight feet long, and made of two-inch plank. The bottom is two feet wide on the flat, and a plank twelve inches wide is placed in front at such an angle as will enable the drag to ride over the ground and crush all rough clods without pushing them ahead. The sides are made of 4×4 scantling, beveled at one end to fit the front plank. A chain is fastened to the front by hooks, and when in use the driver rides. In addition to its use as a clod-crusher, it will be found very convenient in gathering rubbish and roots of grass or other weeds from plowed ground. The accompanying engraving shows the drag ready for use.



A SMOOTHING DRAG.

Our Supply of Salmon Spawn.

It is only four years ago that we were obliged to send to the government hatching house on Wilmot's Creek, near Newcastle, Canada, for salmon eggs, and get them as a special favor, at $40 a thousand, gold. So jealous were the Canadian authorities of all intrusion into their territory for salmon spawn, that the hatching works on the Miramichi River were broken up, and we had to purchase at the Wilmot establishment, or go without. Fortunately there were a few rivers in Maine that yielded salmon, and it was thought possible to get a supply from the Penobscot, where some six or eight thousand were taken annually by fishermen. There had been a successful experiment of taking land locked salmon spawn at Grand Lake Stream in Maine, in the fall of 1870, by catching and pounding the salmon during the fall until they were ready to spawn in November. From this it was inferred that the Salmo Salar might be taken alive from the weirs on the Penobscot during the summer, and kept securely in ponds, until the spawning season. A company was organized of the Fish Commissioners of Maine, Massachusetts, and Connecticut, and the Poquonnoc Fish Company, who agreed to meet the expenses of an experiment near Bricksport, Maine, under the direction of Chas. G. Atkins, Esq., one of the Maine Commissioners. The first year about 72,000 eggs were taken, and the price of eggs to the parties was found to be about eighteen dollars a thousand. The second year, an ap-

propriation having been obtained from Congress, Prof. Spencer F. Baird, U. S. Fish Commissioner, took stock in the enterprise, operations were enlarged, and 1,500,000 eggs were secured, at a cost of about five dollars a thousand. This last fall there was a still larger investment in salmon, and about 2,250,000 were secured, at a reduced price per thousand. These eggs will be hatched and distributed mainly in the rivers of New England. Beside these over a million of eggs of the Sacramento salmon were taken by Livingston Stone, Esq., under direction of Prof. Baird. These, we learn, are destined for the Delaware, and Susquehannah, and streams farther south, to which this species is thought to be adapted. The country is to be congratulated upon this early and abundant supply of salmon spawn within our own borders. The main difficulties in the way of stocking our barren rivers with this delicious fish are already overcome and cheap salmon are not far in the future.

Care of Young Chickens.

F. J. Kinney, Worcester, Mass., sends us his method of raising chickens as follows: The eggs are placed beneath the hens in boxes in the bottom of which dry earth is placed six inches deep. In very cold weather a newspaper folded two or three times is placed upon the earth. Then two or three inches of fine chaff is laid in the box, and the eggs are placed upon it. As the chicks are hatched they are removed, and fresh eggs are placed in the nest. Some hens thus hatch 45 chickens each. Five or six hens are set at a time, which bring out eight to eleven chickens each. Fifty of these chicks are put together into a cheese-box which will hold a 50 lbs. cheese. A hole is cut in the box to let them in and out after they are four days old (see fig. 1), and one inch in depth of clean, dry, coarse plastering sand is scattered in each box. The chicks are fed with thin cakes made of sifted corn-meal and sweet skimmed milk and baked hard. The cakes are pounded fine

Fig. 2.—RUN FOR CHICKENS.

in a mortar, and with each pint the hard-boiled yolks of two eggs are mixed. This quantity serves to feed 50 chicks each day for the first two days; the next two days 1½ pint and four yolks are given, and the next two days one quart and six yolks. After this some boiled meat, wheat screenings, cracked wheat, and corn are given four times a day, in addition to the pounded cakes three times a day, until the chicks are a month old. No soft feed is given. When six weeks old the pullets are separated from the cockerels, and they are each placed 25 to 50 together in separate runs. These are made of dry-goods boxes about four feet long, 2½ feet high, and two feet wide. One side and one end are knocked out from each box, and two are placed together so as to form one open box (shown at figure 2). These are covered with tight roofs of matched boards, and in front of each is placed a fence made of boards sixteen feet long and six inches wide, to which are nailed, one inch apart, common plastering laths cut in two. These runs can easily be moved about, and dry earth, charcoal, feed, or any other thing is easily put into them. Earthen fountains containing two quarts are used, are emptied every night, refilled each morning, and the saucer rinsed out each noon. Holes are cut in the tops of the boxes, so that by removing the roof the chickens may be gathered into a small compass when necessary.

For early chickens a frame may be used (fig. 3). It is made like a hot-bed large enough for three sashes, thirty inches high at the back and fifteen inches at the front. The center only is covered with a sash, the rest of the top

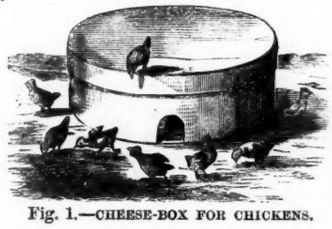


Fig. 1.—CHEESE-BOX FOR CHICKENS.

is covered with a roof of matched boards. The frame is placed at the south side of a tight board fence, and the ground inside is raised four inches with dry clean sand and gravel. Fifty early chickens may be raised in this bed without trouble, and if they are brown Leghorns, and are hatched in March and April, they will bring at eight weeks old 50c. to 75c. a pound for broilers, and the cockerels will weigh two pounds each on the average.

The following is the account for 50 chickens hatched April 27th, 1873, and sold at eight weeks old:

50 chickens, at $1.25		$62.50
1 bushel screenings	$1.00	
2 dozen eggs	80	
1 bushel meal	1.00	
60 quarts skimmed milk	1.50	
½ bushel onions	1.50	
5 bushels small potatoes	2.00	
100 lbs. cabbage	3.00	
1 bushel cracked corn	50	
6 dozen eggs set	2.40	
Feed of hens	1.00	
		$14.70
Profit		$47.80

The manure pays more than the cost of frames and care.

The hens need to be carefully managed. They require green feed, meat, a variety of grain daily, with pure fresh water, sand, crushed shells, and bones, dry ashes or earth to wallow in, and plenty of light and ventilation. Ten hens with one thorough-bred cock may be kept in a room 18 by 6 feet perfectly clean and free from unpleasant smell, and each hen may be made to hatch out 45 chickens. Of the chickens hatched nine out of every ten may be raised by using the plan previously described. The yellow Western corn, cracked, is the best standard feed. Shorts scalded with the water the meat is boiled in, and fed warm, should be given to the laying hens. Full grown fowls should get two ounces of meat a day, all at once, in the morning, during the cold weather, and in two portions in the summer. Onions

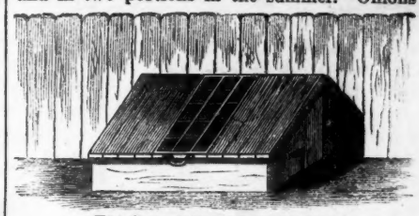


Fig. 3.—FRAME FOR CHICKENS.

are very desirable feed, and every day some should be given along with raw potatoes or turnips pounded fine. Cabbage is excellent but costly. Fowls should be fed thrice a day, and in warm weather fresh water should be given as often.

The following is an account of the expense and receipts of 28 hens with their progeny, including the present value of the chickens raised, during the past year. All the figures are taken from the account book except those relating to the manure, which are estimated:

22 Brown Leghorn and Worcester Co. fowls, at $5.00		$110.00
6 mixed hens, at $1.25		7.50
100 bushels grain		100.00
2,000 lbs. meat, at 1½c. a lb.		30.00
3,000 lbs. vegetables, at 1c.		30.00
Care, at 30c. a day		109.50
House rent and incidentals		30.00
		$417.00
CR.		
407½ dozen eggs, at 40c	$163.00	
Eggs sold to hatch	27.50	
Chickens sold for poultry	98.78	
Chickens sold to breed from	262.00	
100 B. L. hens in yards	500.00	
18 crowers, at $5.00	90.00	
5 Worcester Co. crowers	25.00	
20 Worcester Co. hens	100.00	
33 mixed hens for sitting, at $1.25	41.25	
2 tons manure, at $60.00	120.00	
		$1,427.53

The Sod House.

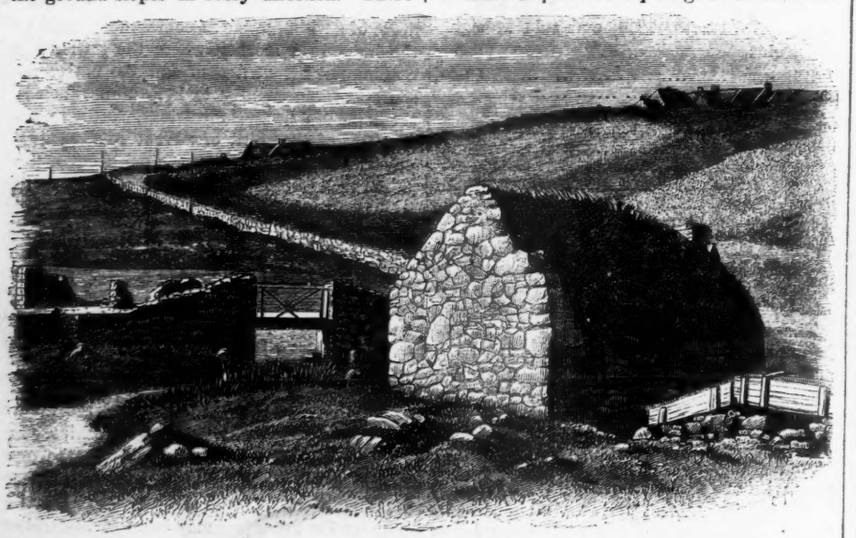
The sod house of the prairie or the plains is the counterpart of the log house of the backwoods. Each is the rough-and-ready dwelling made of such material as comes most easily to the hand in a locality where the settler has nothing but his own skill and the native resources of the country to help him. Each is the home of a hardy, industrious, worthy representative of the spirit of adventure and enterprise, who carves a home for himself out of the wilderness. Each frequently shelters beneath its roof a settler who is poor in everything but hope and determination to succeed, but yet in each we have seen a home where an intelligent family has lived for a time in comfort and has enjoyed many of the advantages of what is called civilized life. Books, pictures, and music are sometimes seen in such habitations, occupied by well-educated and intelligent settlers, who for the sake of advancing the interests of their children have chosen to undergo many privations and some temporary hardships. In the interiors of some such houses as the one here pictured, well-filled book-shelves, a musical instrument, newspapers and magazines may be seen, and yet the floor may be of earth and the chimney of sticks plastered with mud. Yet the hopeful anticipations of future prosperity keep the tenants of these rough habitations in cheerful spirits, and each field broken and

planted and each tree started into growth repays all its cost of discomfort. Many of the most cheerful and congratulatory letters we receive come from such habitations, and only recently one came from a sod house in Nebraska, written by a lady who cheerfully described the earthen floor of her cabin, and remarked that if she and her young children were to choose, she and they would many times rather keep the earthen floor than miss the *Agriculturist's* monthly visits to them. Doubtless there is sunshine in that cabin whatever there may be outside of it, and the incident helps to recall to us the remembrance of several such homes upon the unbounded prairie from whence we have seen neatly dressed children issue, singing and frolicing on their way to school, or from which we have heard the sounds of music as we rode past. But while all this and sometimes the reverse is often true, there is a practical sense in which the sod house should be considered; for if the floor is wet, and the roof leaks, and the walls are suspiciously unsafe, the most cheerful-minded woman will lose her good-nature and contentment, and the chief support of the household being withdrawn disorder and discomfort reign therein. The choice of situation for the dwelling is the first consideration. This should be a spot from which the ground slopes in every direction. There should be no hollows near, for in the spring and early summer these hollows often become lakes of water, and every level spot is saturated.

SOD HOUSE—INTERIOR.

If the ground slopes towards the dwelling in any one direction there is danger that some heavy rain may swamp it completely, and if the cabin is a "dug out" the basement will be filled with water. Frequently this danger is not discovered until the misfortune occurs, and then it is too late. In building up the sods the joints should be broken, especially at the corners of the building, or cracks will open as the structure settles. In winter time these cracks will be found inconvenient. As these buildings are only intended to be temporary, the stables and out-houses should be placed as near to them as may be; and for protection against the few severe storms that may occur in winter, when it may be unsafe to be at a distance from the house, a shelter of sods or some other material should be made to protect the passage from the house to each out-building. Such a convenience might have saved life during the winter of 1872–'73 which was lost for want of it. In general, it is far from wise for a new settler to ignore the fact that his neighbors frequently know more than he does himself, and that it is the part of wisdom to receive advice, and indeed to ask it, especially if the settler is from a foreign country and is unused to the ways and the necessities of his newly-chosen locality.

SOD HOUSE—EXTERIOR.



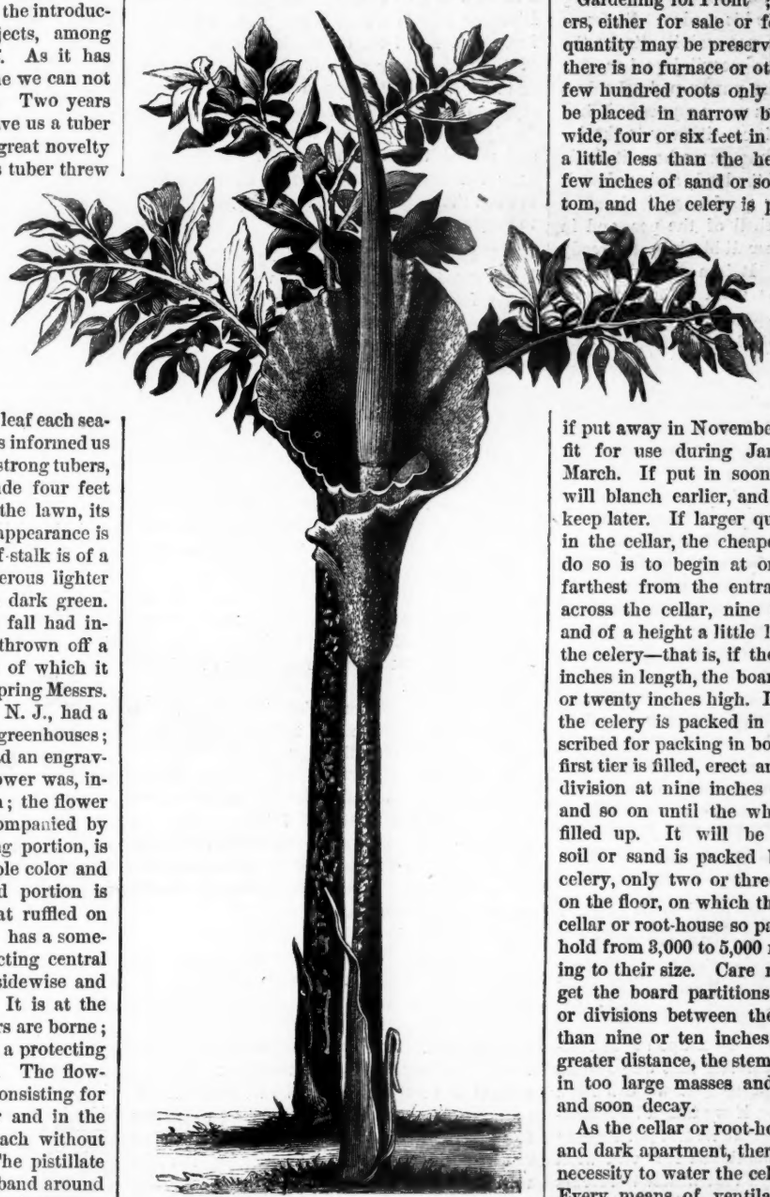
A SHETLAND GRIST-MILL.

A Shetland Grist-Mill.

At the present time some American farmers consider themselves the most unfortunate of their class, that they work harder for less profit, and enjoy fewer of the comforts of life than any farmers elsewhere. It may probably tend in some degree to dispel such a mistaken idea to consider the position of farmers elsewhere. With this view we give an engraving of a farmstead and grist-mill in Scalloway, one of the Shetland islands. The grist-mill, which is shown in the foreground, would be impossible to match in this country for poverty and wretchedness. It contains but one pair of stones, which are turned by a horizontal wheel consisting of pieces of board fixed to an upright shaft, and the movable stone is fixed upon this shaft, making but sixty revolutions per minute. There are no bolts in the mill; the only grain ground is oats, and each farmer who carries his grain thither grinds his own grist, which runs from the stones upon the floor, from which it is swept up and taken home in the bags in which it was brought. If this process is rough and inconvenient, the farming upon these islands is equally rough and surrounded with hardships. Oats are the staple, or rather the only grain which ripens, and sometimes this crop fails to mature, or the season is so unpropitious that it can not be gathered, but remains in the shock far into the next season before it can be dried sufficiently to thrash, or is sometimes totally lost. The herbage is scanty but nutritious, and sustains the very diminutive ponies, which are the only horses upon the islands, a few very small cows, which give three quarts of milk per day during a short season, and very short-wooled sheep, some of which are not much better than goats. The winter lasts six months, and the agricultural operations of the inhabitants are supplemented by fishing, which is rendered hazardous by the frequent storms. We doubt if there is one farmer in our highly favored country whose position would be bettered by changing places with the most prosperous Shetlander.

An Enormous Arad — Amorphophallus.

The recent taste for "subtropical" gardening, in which regard is had to grace of form in plants or striking character of foliage, rather than beauty of flowers, has led to the introduction of numerous curious subjects, among which is *Amorphophallus Rivieri*. As it has not yet received any English name we can not offer any other as an alternative. Two years ago, Messrs. B. K. Bliss & Sons gave us a tuber about the size of one's fist as a great novelty just received from France. This tuber threw up a single leaf-stalk about two feet high, which at the top was surmounted by a large umbrella-like leaf cut into three principal divisions, which are themselves curiously and irregularly subdivided. An idea of the form of the leaf can be obtained from the engraving, though a portion of it is concealed by the flower. The tuber produces but one leaf each season, but this is a monster. Mr. Bliss informed us that he saw them in France, from strong tubers, four or five feet high, with the blade four feet across. Growing by itself upon the lawn, its unusual and somewhat grotesque appearance is sure to attract attention. The leaf-stalk is of a greenish black color, with numerous lighter spots, while the leaf itself is of a dark green. Our tuber when taken up in the fall had increased considerably in size and thrown off a great number of offsets, by means of which it may be rapidly propagated. This spring Messrs. Olm Brothers, florists, of Newark, N. J., had a large tuber flower in one of their greenhouses; they sent it to us, and we have had an engraving made from it. The huge flower was, including stem, about three feet high; the flower stem arises from the tuber unaccompanied by leaves, and, as well as the flowering portion, is of a peculiarly lurid greenish purple color and spotted; the spathe or expanded portion is irregular in outline and somewhat ruffled on the margin; the interior surface has a somewhat metallic luster. The projecting central portion, the spadix, is flattened sidewise and roughened with small tubercles. It is at the base of this spadix that the flowers are borne; the large showy spathe being only a protecting covering and not the flower itself. The flowers are of the simplest structure, consisting for the male flower of a single anther and in the fertile flower of a single pistil, each without anything like calyx or corolla. The pistillate flowers are crowded together in a band around the base of the spadix, with the staminate ones in another band directly above them. The engraving will at once bring to mind the common Calla Lily, and the flower looks like an enormous lurid purple Calla without leaves, but still more like some of the exotic Arums. We ought not to take leave of this remarkable flower without saying something of its odor—to describe it is hardly possible. The eccentric Dr. De Wolf said that a dead dog was a true aristocrat, as he kept common people at a distance; so this must be among the most aristocratic of flowers, as but few would venture upon familiarities with it. Dr. Wight says of an Indian species, *A. campanulatum*, that its odor was such "as to induce flies to cover the club of the spadix with their eggs." The flies may be pardoned for their mistake if the odor of that species was like that of this. It is not a desirable plant for house culture, but a most striking one upon the lawn, and as the flowers appear before the leaves they can be cut away before they open. As the tubers multiply rapidly, and are kept with no more care than is required by the Dahlia, we think it will become popular with those who like odd things. The plant was first brought into notice by M. Riviere, director of a garden near Algiers, who found a minute tuber accidentally mixed with some seeds sent from Cochin China, and to whom the species was dedicated. The generic name, *Amorphophallus*, might be translated, an unshapely club, probably because the club-like spadix is flattened and irregular in form.



AMORPHOPHALLUS RIVIERI.

The Preservation of Celery.

BY PETER HENDERSON.

Spring is hardly the proper season in which to describe an operation that can only be done on the approach of winter, but I am convinced that many of your readers would cultivate celery, were they sure that they could easily preserve it during the winter. Market gardeners, who store away large quantities, preserve it in narrow trenches in the open ground, and protect it by means of a covering of leaves or litter, as already described in your pages and in "Gardening for Profit"; but for smaller growers, either for sale or for private use, quite a quantity may be preserved in any cellar where there is no furnace or other fire heat. When a few hundred roots only are to be stored, it can be placed in narrow boxes, say nine inches wide, four or six feet in length, and of a depth a little less than the height of the celery. A few inches of sand or soil is placed on the bottom, and the celery is packed in the box upright, the roots being placed on the sand at the bottom; the celery must be packed in as tight as possible, but without bruising. Boxes thus packed and stood on the cool floor of the cellar, if put away in November, will be "blanched" fit for use during January, February, and March. If put in sooner than November, it will blanch earlier, and if stored later it will keep later. If larger quantities are to be kept in the cellar, the cheapest practicable way to do so is to begin at one side next the wall, farthest from the entrance, and erect boards across the cellar, nine inches from the wall, and of a height a little less than the length of the celery—that is, if the celery is twenty-four inches in length, the boarding may be eighteen or twenty inches high. In this narrow division the celery is packed in upright, as above described for packing in boxes. As soon as the first tier is filled, erect another board trench or division at nine inches distant from the first, and so on until the whole space required is filled up. It will be understood that no soil or sand is packed between the stalks of celery, only two or three inches being strewn on the floor, on which the roots are placed. A cellar or root-house so packed, 20 × 20 feet, will hold from 3,000 to 5,000 roots of celery, according to their size. Care must be taken not to get the board partitions forming the trenches or divisions between the tiers of celery more than nine or ten inches apart, for if at much greater distance, the stems and leaves would be in too large masses and would generate heat and soon decay.

As the cellar or root-house is usually a damp and dark apartment, there will generally be no necessity to water the celery after it is packed. Every means of ventilation should be used, even in cold weather, for it must always be borne in mind that celery is a vegetable that will stand quite a severe frost without injury, so if the temperature of the cellar falls five or six degrees below the freezing point, no injury will be done. When celery or other vegetables are packed away for preservation in cellars or in the open field, it is indispensable that no water be allowed to lodge in the pit or trench; so that in the event of using a cellar or root-house for this purpose, a matter of first importance is to provide for thorough drainage, in soils where drainage is at all necessary.

THE WEEPING POPLAR is now being written up abroad, and this will probably convince our planters what we have for years insisted upon, that it is one of the most valuable of lawn trees. It should be grafted eight feet high.

THE PEA-WEEVIL.—We do not know if seed peas are unusually "buggy" or not this year, but we have had an unusual number of letters about the "pea-bug," as the insect is incorrectly called. One writer is afraid to plant some "buggy" peas for fear of introducing troublesome insects into his garden. So far as we are informed, the pea-weevil attacks the pea only. The mother weevil lays her eggs upon the outside of the young pod; she does not "sting" the peas, as many suppose. When the larva hatches out it eats its way to the inside of the pod and young pea, where it feeds on the (marrow) fat of the land, and, unless it is first eaten itself by pea-lovers, it forms a chrysalis within the shell of the pea, and in spring comes out as a small black beetle ready to continue the work. It is a general impression that because the germ is not injured "buggy" peas are just as good as any other for seed. This is a mistake, although the seed will germinate; the plants, being deprived of their proper nutriment when young, the weevil having devoured it, are never so vigorous and productive as those from sound peas. Our seedsmen have their seed peas grown in localities where the insect has not yet been introduced or where cultivators take pains to destroy it. Peas germinate when several years old, and if all in a neighborhood would agree to plant no infested seed for a year the insect would disappear. White says that putting the peas in a tightly corked bottle with a tea-spoonful of spirits of turpentine will kill the insects without hurting the peas. Others have successfully used chloroform in the same manner. If the peas are put into water the unsound ones will float. In raising peas for seed the insect can be avoided by planting in June, after it has ceased to operate, though in most localities late-planted peas do not succeed very well.

Notes from the Pines.

FORCED PLANTS.—Any plant made to grow and flower at other than its natural season is properly a forced one. When we bring Hyacinths and other spring-flowering bulbs into bloom in January, they are forced, though that is done so frequently and even in an ordinary window that we do not look upon it as forcing. There are many plants that we enjoy in the open border in spring that we can have in flower in the winter, if we take a little forethought, and get up the plants and pot them in the fall. I think I mentioned last year what gratifying success I had that winter in forcing *Astilbe* (or Spiræa, as some will call it) *Japonica* in my study windows. Bleeding Heart (*Dicentra*) is another excellent subject for forcing; it will do well in a warm window, and nothing can be finer. In forcing such plants as these the

ESSENTIAL THING TO OBSERVE is to give the plants a complete rest before we begin to start them. In the open border they are kept perfectly dormant by the low temperature, and when we pot them in the fall they should be kept in a cool place. The cellar is often so warm that they are excited into growth too soon, and this must be prevented by keeping them as dry as may be without injury. If kept wet in a warmish cellar, they will make a slow growth and fail of that absolute rest which seems to be necessary. Last fall the ground had begun to freeze before I had lifted all my plants, and some were grubbed up with a cake of frozen earth adhering to them. These were put under the greenhouse bench to thaw out, so that they could be potted. Some weeks after, in overhauling the things stored under the benches, I came across some roots without a label, which on examination proved to be the Bleeding Hearts which were taken up to be forced but had been overlooked when the rest of the things were potted. They were so dry as to be apparently beyond all hope of recovery, and I was about to throw them out, but finally concluded to see what they would do, and potted them. I never saw the Dicentra finer than came from these roots, which had been so thoroughly rested that I supposed them to be past awakening.

A GREENHOUSE PUMP.—Early in the winter I got tired of the primitive way of dipping water from the cistern under the greenhouse floor and looked about for a pump. By good luck my eye caught the advertisement of the People's Pump, sold by W. S. Blunt, No. 77 Beekman street. An inspection of the pumps gave a favorable impression, and one was ordered and put in. It stands under the bench of the greenhouse, quite out of the way; the handle in use projects into the path, but at other times it is fastened up against the edge of the bench by a button, and is hardly noticeable. It can be transformed from a lifting into a forcing pump in "a jiffy," and as either it is perfectly satisfactory. The compactness of the affair and the ease with which it works are so satisfactory that it is almost worth while to build a greenhouse just for the fun of having a People's Pump.

It is not altogether satisfactory to write at the end of March notes to be read in May. Spring work has hardly begun, and in May one will not care to think about in-door plants. With so large and miscellaneous a collection as I have, it is a matter of interest, after cold weather is fairly over, to go about and see how things have passed the winter. It is a succession of surprises. Many plants that one would expect to find hardy are found dead, and others that were left to be killed by the winter will be found to survive. It is a great pity that we have nothing in this country to correspond to the French garden of *Acclimatation*. There is no direction in which experiments can be more usefully made than in testing the hardiness of different plants. It is true that the nativity of a plant is some guide, but by no means a certain one, as some of our persistent weeds are from tropical countries. We now and then find out by accident that a plant heretofore thought to belong only to the greenhouse is really hardy. Few persons can afford to experiment largely in this matter, and there should be some public garden where it could be done.

PRIMULA JAPONICA.—At last I have flowered this much talked of and high priced novelty. Year before last Mr. Hogg gave me a plant of the "simon pure" right from Japan, but it daily grew smaller. Last fall he gave me another, which was left out in a frame until January, and Mr. Chitty of Bellevue Nursery, Paterson, N. J., sent me this spring two more that had been similarly treated. One of these plants was put in the coolest part of the greenhouse and the other two in a window of my study, and all three came on finely. Many have complained of failure with this plant, but it has been due to too tender treatment. It is, no doubt, perfectly hardy—though no one that I have heard of has risked his $3 or $5 plants to establish the fact—and should be treated like any other hardy perennial. If wanted in bloom in the house, then it should have the same treatment as other hardy plants that are forced. The plant is a beautiful one, but mine do not bear out the extravagant encomiums of the English horticultural journals or the highly colored plates of the foreign catalogues. It is handsome and showy, but has not afforded me so much pleasure as another Primrose,

PRIMULA INVOLUCRATA, about which no one has exhausted all the adjectives and exclamation points. A plant of this modest species came from Mr. George Such, at South Amboy. The leaves are of a peculiar silvery whiteness, and the plant would be a handsome one if it did not flower. It throws up a cluster of long tubular, delicate yellow flowers of the fragrance of a spring morning.

PLANTING TIMBER.—It will be but a very few years before timber becomes very much enhanced in value. Ten years more will see the supply in the north-west greatly reduced in quantity. No more profitable use of land can be made than to plant walnut, chestnut, oak, hickory, spruce, ash, maple, poplar, and other trees that have a value in the arts for their timber. It is highly probable that, as pine becomes more costly, it will be used only as joists, rafters, and flooring, and that brick and stone will be more commonly employed as building materials. When this occurs the stock of pine, throughout the country, will be found to last almost indefinitely. The more valuable pine trees grow very slowly and would hardly be profitable to plant.

Crossing—Hybridizing.

There would appear to be just now an unusual interest in the matter of improving plants by crossing or hybridizing, to judge from the letters we have had asking us to describe the process. Crossing and hybridizing are terms often and incorrectly used to express the same thing. Crossing takes place between varieties of the same species, while hybridizing should only be applied to the operation as applied to plants of different species. The latter are very often infertile and can not be propagated by seed. We are asked for directions to perform the operation, but can only give the most general ones. Whoever would experiment in this matter must have some knowledge of the structure of flowers and be a close observer. The production of a cross or a hybrid is effected by fertilizing the pistil of one plant by the pollen of another plant. To understand this simple statement requires a knowledge of flower structure that many have never acquired. In every perfect flower there are two sets of organs engaged in the production of the seed. A magnified flower of the grape (fig. 1) will serve to illustrate. The bottle-shaped central body, *b*, is the pistil which contains some minute greenish pulpy bodies which may become seeds, but which will never mature into seeds unless they receive some influence from without; in other words, they must be *fertilized*. Here in the grape there is an abundant provision for fertilizing the pistil in the bodies which surround it, one of which is marked *a*. These are the stamens, each of which consists of a two lobed pouch upon a stalk. This pouch is the anther and the stalk the filament. When the flower is fully developed, each half of the pouch or anther cracks open by a slit and lets

out a fine yellow dust, the pollen. Unless this pollen, or that of some other grape, falls upon the proper part of the pistil, which in this case is the flattened disk at the top, it will produce no seeds. It is not necessary here to state what is known of the way in which fertilization takes place. Practically there must be a pistil to be fertilized and pollen to fertilize it. In the grape these are both provided in the same flower; in Indian corn, the squash, and all of that family, one set of flowers has the pistils and another set the stamens which furnish the pollen. In the hop, spinach, and others, the pistil bearing and pollen producing flowers are on different plants. The grape was taken as an illustration, and let us continue with that. In the ordinary course of things the pollen will fall upon the stigma and fertilize it, or if the pollen of this flower is not quite ready to be scattered and the pistil is ready to receive it, the pollen from another flower close by may fall upon the pistil and complete the work. Now to cross this grape, which we will assume to be the Clinton, with another, we will say the Black Hamburgh, we have to attend to three things: We must prevent this flower from being fertilized by its own pollen; we must bring to it the pollen of the Black Hamburgh and, after applying this, prevent any pollen from another Clinton flower being brought by winds or insects to this pistil. The petals of a grape flower fall off as a little cap; when this is about to fall off it is removed, and all the stamens, before they have shed their pollen, are cut away. Some are so expert as to be able to pinch them off. This prevents the flower from fertilizing itself, and is done early in the morning. In practice several flowers on a bunch are prepared and all the rest cut off. The pollen of the Black Hamburgh must be at hand. This is collected from the flowers of that variety by holding a sheet of paper under the flower clusters and shaking them. When the day is warm and the air dry, pollen in great abundance is shed by the anthers. The pollen when collected is carefully preserved in a small bottle or, if not to be kept long, in a paper. Grape pollen will keep in good condition for some weeks, and that of other plants has been known to preserve its vitality for months. The maturity of the pistil is known in the grape by the moist appearance of the stigma, as that portion which receives the pollen is called; and by means of a camel's hair brush some of the foreign pollen is placed upon the stigma, and then the flowers that have been thus operated upon are inclosed in a muslin bag to prevent insects from bringing other pollen to them, as this might interfere with the action of that already applied. This is the briefest outline of the manner of crossing or hybridizing the grape. If a novice wishes to try the process upon some other plant, the first difficulty he will meet with is that the flower is quite different in appearance from the grape, and he is at loss to discover the parts that appeared so plain in the grape flower. All flowers are constructed upon the same plan, but the variations in carrying out the details are truly wonderful, and unless one knows the variations of which all the parts are susceptible he will be puzzled. Compare the potato flower, fig. 2, with the grape flower. In the grape the stamens are longer than the pistil, and stand out from it, and the filaments are long in comparison with the anthers. In the potato the stamens are shorter than the pistil, and are crowded close to it; the anthers, which in the grape were small, are here longer than the filaments, and instead of opening by a slit to let out the pollen it makes its escape through little holes in their tops. Here are all the parts that are in the grape flower, but wonderfully modified. Another variation is all we can show. Fig. 3 is a lilac flower cut open. Here the novice will be puzzled to find two stamens only, and these stuck fast to the tube of the corolla. A mere outline of the matter can only be given here, but enough has been said to show that whoever would undertake artificial fertilization must give some thought to the matter. The whole subject of natural fertilization is full of interest and abounds in curious facts, and is worthy the study of any intelligent person, even if he does not wish to make any practical use of the insight he may gain of the workings of nature. It may be mentioned here that a French florist, whose name we have forgotten, has recently found it to be a great aid in his fertilizing operations to touch the stigma of the pistil with honey, and that by thus doing his success is much more uniform than before. It is probable that the honey serves to retain the pollen until the stigma is ready to receive its influence.

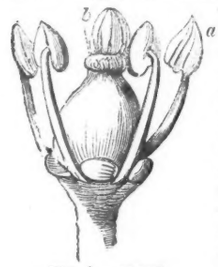


Fig. 1.—GRAPE.

Fig. 2.—POTATO.

Fig. 3.—LILAC.

The Vanilla Plant.

BY H. G. LUNGREN, M.D.

[By Vanilla plant we do not refer to the plant which furnishes vanilla, but to a native species, *Liatris odoratissima*, which, on account of a similarity of odor, has received that name. Most of the species of *Liatris* or Button-snakeroot, have a tuber-like root, and long straight stems upon which the numerous flower-heads are crowded in a close spike. A number of these are cultivated as ornamental plants, and we figured several of them a few years ago. In *L. odoratissima*, the root-leaves are from 8 to 12 inches long by 2 or 3 broad; those of the stem very small. The stem divides above into a broad branching panicle of purple flowers, which make the plant an attractive one. Our correspondent, Doctor H. G. Lungren, of Volusia Co., Fla., has at our request given us the following account of the plant.—ED.]

The Wild Vanilla, or, as it is commonly called, "Hound's Tongue," or "Deer Tongue," grows abundantly on the edges of what are called "Bays," *i. e.*, low mucky places in the pine woods, which are partially covered with water and grown over with bays (a species of Magnolia), or on low swampy pine woods in East and South Florida and in portions of lower Georgia. The fresh leaf has, when crushed, a greenish, disagreeable odor, but when pulled from the plant and dried in the shade for a day or so, it becomes highly fragrant, having a smell resembling vanilla or Tonka-bean, and similar to the sweet-scented vernal grass, but much stronger. This odor is developed by some chemical change made in the leaf during the process of drying, whereby a peculiar principle known as Coumarine is formed. Coumarine is found abundantly in the Tonka-bean of commerce, but so abundant is it in the Liatris, that it is often found in large quantities on the upper portions of a mass of the semi-dried leaves. It is readily sublimed by a low degree of heat (150°), and the heat generated in these masses or bundles is sufficient to sublime it on the upper or cooler layer. When found in this way, Coumarine is composed of snow-white, needle-shaped crystals, exceedingly fragrant—a leaf of the Liatris often being covered on its under side, and looking as though it had been out all night in cold, frosty weather.

The dried leaves furnish an article of commerce, and one that is steadily growing in importance. It is gathered all through East and South Florida, principally on the St. John's river and its tributaries, by the poorer people, and sold by them in small lots to the country store-keeper in exchange for goods; by these store-keepers it is sent to the balers and packers, by whom it is sent to New York for home use and exportation. Pilatka, on the St. John's river, is the head-quarters in this trade. One may often see seventy-five or one hundred bales, of 200 lbs. each, lying on the wharves, awaiting shipment—one dealer at this place having an order to fill of 150,000 lbs. Adults can gather from 150 to 400 lbs. of the green leaves in a day; active boys and girls nearly as much. The green leaves are taken home and dried in the shade, and lose about 80 or 85 per cent; they are, when dried, sold at the country stores for from 3 to 6 cents per lb., yielding quite a good return for the labor. The packer bales and ships, and realizes from 8 to 12½ cts. per lb. The dried leaves are used to give a flavor to segars, snuff, and smoking tobacco. For segars, it is sufficient to place the leaves and segars in alternate layers in a box, and allow the whole to remain together for several days; for snuff, the leaves are dried, ground, and mixed; it is granulated or shredded up and mixed with smoking tobacco. A small quantity is sufficient to flavor a large mass of tobacco. The odor is given off much more intensely on a damp day than on a dry one. Although large quantities of these leaves are consumed in our home factories, a much larger quantity is shipped to Germany and France direct, where it is rapidly growing in favor. It is quite probable that it will soon be an article used extensively in perfumery; and as it is known to keep "the wicked moth away," it will be in great demand for that purpose in the stead of the strong-smelling camphor and tobacco stems.

The Pale Corydalis.

As we were, a few years ago, inspecting the grounds of a well-known amateur cultivator of flowers, he said: "Come and see a new Dicentra that I have just flowered." We went, and found the Pale Corydalis, *Corydalis glauca*, which we had never before seen in cultivation

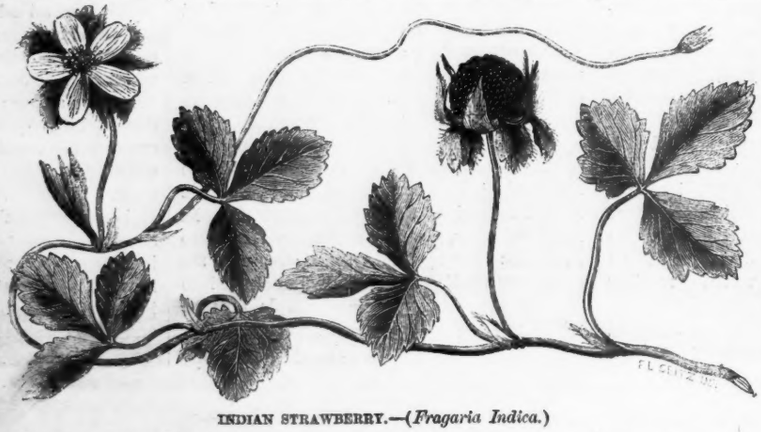
except in our own grounds. Among the many wild flowers that we have introduced into the garden none have given us more pleasure than this. It is a biennial, which ripens its seeds and drops them early, and the young plants from them acquire sufficient size the same season to flower next year. In the wild state it is more common in rocky places than elsewhere, and is often not more than six inches high, but in the more favorable soil of the garden it is two feet or more. The plant in its first season from the seed is not without beauty, as it presents a tuft of finely-divided leaves which are of a remarkably pale, glaucous-green color. In May it shoots up a leafy flower stem which bears at the top a panicle of purplish, yellow-tipped flowers, which, while not very showy, are exceedingly neat and pleasing. In the garden the plant continues to flower nearly all summer. The flowers resemble those of the well-known *Dicentra*, except that instead of having two spurs to the corolla this has but one. This species is rather common, and is found as far south as the mountains of North Carolina; a pale yellow species, *C. flavula*, and a golden yellow one, *C. aurea*, are less common. Several exotic species are perennials, the finest of which, *C. nobilis*, is sometimes, though rarely, seen in our gardens. The Corydalis belongs to the Fumitory Family (*Fumariaceæ*), and its name is the ancient Greek one for Fumitory. The beautiful Alleghany-vine, *Adlumia*, and the native and cultivated Dicentras (Bleeding-Heart, Dutchman's Breeches, and Squirrel Corn) also belong to the same botanical family.

PALE CORYDALIS.—(*Corydalis glauca.*)

VANILLA PLANT.—(*Liatris odoratissima.*)—*See page* 183.

The Indian Strawberry.

It is a little strange that a plant, at first known only from Nepaul, should have become naturalized in this country and make itself at home with all the appearance of belonging here. This the Indian Strawberry, *Fragaria Indica*, has done. It is sparingly found near Philadelphia and more plentifully farther south. Many years ago it was collected in Georgia by the late Mr. Durand, without suspecting it was not a wild plant. He sent the plant to Torrey and Gray, who supposed it to be a new species of Cinquefoil or *Potentilla*, and named it in their Flora of N. A., *P. Durandii*. As these botanists had the plant without fruit, this mistake is not to be wondered at, as this *Fragaria* differs from all other strawberries in having yellow flowers, which is the color of the flowers in most Potentillas; the main differences between the two being found in the fruit. The Indian strawberry, which is a much smaller plant than either of our native ones, unlike them produces leaves along its runners; its manner of flowering is different from that of other strawberries in producing a single flower stalk in the axil of a leaf which bears but a solitary flower. The calyx proper has acute sepals, and immediately beneath these are toothed leafy bractlets; petals bright yellow. The fruit, which is small, has the appearance of an ordinary strawberry, but is odorless and insipid. In Europe it is valued as a plant for growing upon rock-work; it is also fine for a hanging basket, being an almost perpetual bloomer. A piece of our garden plant was taken into the house, and has produced its cheerful yellow flowers and bright but deceptive scarlet strawberries all winter.



INDIAN STRAWBERRY.—(*Fragaria Indica.*)

THE HOUSEHOLD.

☞ *(For other Household Items, see "Basket" pages.)*

About Paper-Hangings.

It has no doubt puzzled many housekeepers that wall-paper should be called paper-hangings, and that a man whose business it is to paste paper upon a wall should be called a paper-hanger. In olden times the rooms of the wealthy had their walls covered with fabric of some kind—silk or velvet and even leather being used, as well as tapestry, which was often most elaborately embroidered and very costly. These were called hangings. Some 200 years or more ago paper to use instead of these fabrics was imported into England from China, and was naturally enough called paper-hangings. Paper for walls had been in use from time immemorial in China, where the designs were put upon the paper with a brush. The early English attempts to imitate the Chinese paper were by stencilling—*i. e.*, rubbing on the colors through patterns cut out of pasteboard. This rude method soon gave way to stamping the figures upon the paper by means of wooden blocks upon which the design was carved. Before the invention of the paper-making machine the paper was all in single sheets, which were first printed and then pasted together. First there was a ground color rubbed evenly over the paper by means of brushes made for the purpose; this was dried, and either printed on directly or the surface polished by rubbing. Then the design was printed on by blocks, first dipped in the color, and then applied by means of pressure or struck a smart blow with a mallet. One block printed but one color, and there had to be as many blocks as there were to be colors in the figure, each color being applied separately, and the paper dried after each impression. For the finest French papers block printing is still in use, and at one establishment celebrated for its papers, which are said to equal fine paintings, as many as 3,000 blocks are required for one pattern. The invention of the paper machine, which produces paper in a continuous sheet of any required length, and the application of machinery to the printing, has quite revolutionized the manner of making all but the most costly kinds of wall-paper. Calicoes were formerly all printed by hand with blocks as described for paper printing, and the invention of the calico-printing machine naturally led to the use of a similar one for printing paper.

One of our artists has recently visited a paper-hanging factory, and made sketches of the operations. The colors used are mixed with a size of glue-water sufficiently strong to make them adhere when dry, and some, especially the ground color of the paper, are thickened with very fine clay to give it body. The first operation, as in block printing, is to apply the ground color, which, like all other steps of the process, is done by a machine (fig. 1); here one side of the paper which is in large rolls of 60 to 100 pounds comes in contact with the body color, and is passed into the drying-room (fig. 2), where it hangs over poles in a highly heated atmosphere until it is quite dry. It is again rolled up for the next process. If the paper is to be "satined," as those which have a smooth, polished surface are called, it is passed through a machine (fig. 3) where it is subjected to the friction of a rapidly revolving brush, which leaves the surface finely polished. The paper, whether "satined" or with a rough ground, has the figure printed on it by means of a machine (fig. 4) very much like those on which calico is printed. The designs are cut upon rolls, which are cylinders, usually of copper, upon which the pattern is engraved. These are so arranged as to take up the color and apply it to the paper as it passes over them. There must, of course, be as many rolls as there are colors to the figure, and the impression made by each must match that made by the preceding one with great nicety. The final operation is to make up the paper from the large roll into smaller ones such as are sold in the stores. This is also done by a machine (fig. 5). When the small roll is of the proper size it is cut off by means of a large knife with an edge like a saw. Those papers that present a rich, velvety surface have this effect produced by what is called flock—this is wool, usually the shearings from woolen-cloth factories, dyed of different colors, ground in a mill, and sifted. The portion of the paper to which the flock is to be applied is first covered with an adhesive size and the flock sifted over it. Frequently

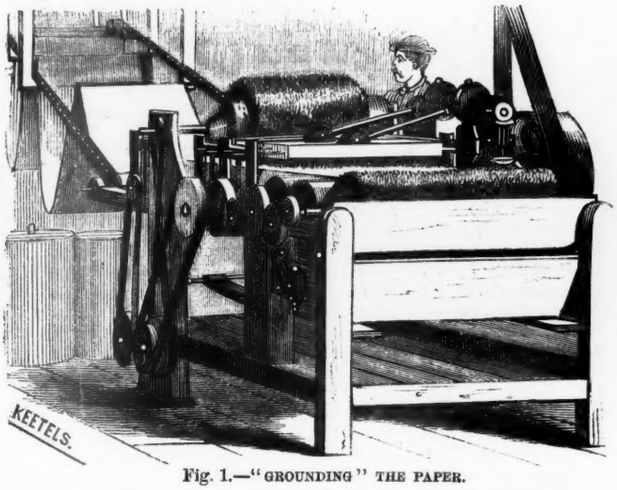


Fig. 1.—"GROUNDING" THE PAPER.

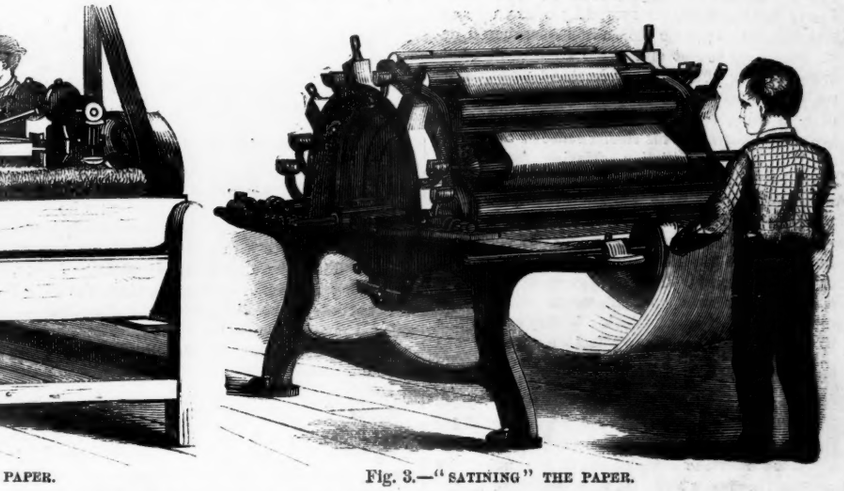


Fig. 3.—"SATINING" THE PAPER.

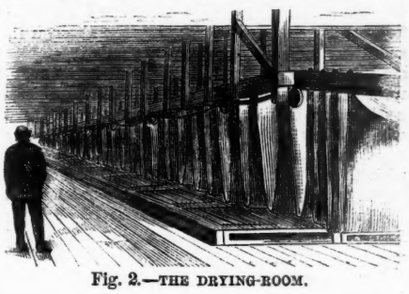


Fig. 2.—THE DRYING-ROOM.

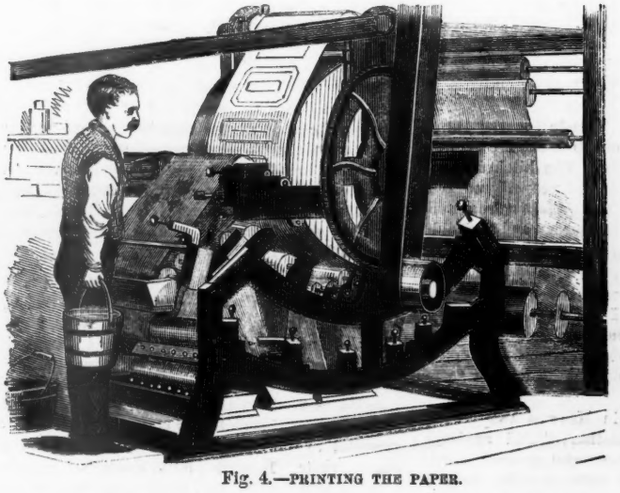


Fig. 4.—PRINTING THE PAPER.

Fig. 5.—MAKING UP THE ROLLS.

papers have gold introduced in the pattern. The places to be gilded are printed with size, and gold-leaf imitation metal leaf is applied by hand.

Closets in the House.

Having suffered some for closet room at one time and another, or for places to stow away things, I have had considerable sympathy with that man who said that when he built a house he should begin with a big closet and make additions to that. When I speak of closets my husband understands me, but immediately begins to talk about modes of ventilating closets, and I have only gradually grown to understand his strong sense of the necessity for closet ventilation. Having for several years hung the clothing of the family in rooms where there was a free circulation of air, I am surprised when I go into the well-finished clothes-rooms (let us call them *close* rooms) in some fine houses to find how dead and unwholesome—not to say foul—the air is. The soiled garments hung in a tight and dark room, contaminate the whole apartment, and such contamination is very perceptible to a well-trained nose or to olfactories accustomed to the refinement of habitual pure air. Old boots and shoes cause a bad smell in a close room.

To pursue an unpleasant subject a little farther—why *will* people keep the dirty clothes designed for the weekly wash in a close closet? That which has come from the skins of unclean or unhealthy persons (the latter adjective describes nine tenths of the human family) grows constantly more impure shut away from light and air, and everything kept in the same room is contaminated by the effluvia. Can not soiled garments be kept while waiting for the wash, in some bag or covered basket in the wood-shed or some such place? There are baskets on purpose for soiled clothing, open enough for ventilation but too fine to admit mice.

Unless a closet is ventilated so that there is some *circulation* of air through it, it is no place to hang away night-gowns, unless they have previously been aired, so that the perspiration accumulated in the previous night—only insensible perspiration, perhaps—has been dried and sunned away.

I have no means of ascertaining this morning how far science has attended to this subject of closet ventilation, but I am very sure that it is an important matter, and should be well looked into. Of course, there can be closets with windows in them, and this should generally be the case. They can be kept dark, as a general rule, if desired, but it ought to be *possible* to admit a flood of light.

Closets built under stairways might be ventilated by a grate closed by a sliding shutter under one of the stairs. It would be well to have the grate capable of being shut to keep out dust when the stairs are swept. I do not know whether this has been tried, but the idea has occurred to me as practicable. A sliding window in the closet door is also possible. The small sliding window in the door and the grate in the elevation of one of the stairs ought to give a sufficient circulation of air to a small stairway closet.

It is idle to suppose that a closet (or any other room) is provided with ventilation because it is built large and high. There must be some *circulation* of air, or the atmosphere becomes dead.

RELL.

Home Topics.

BY FAITH ROCHESTER.

TOWNS-PEOPLE'S CRITICISMS ON COUNTRY FARE.—The tide will soon be setting again from city to country. City people are generally ready to pay country people a good price for comfortable lodgings and board during the hot summer months; but they make many complaints of disappointment in respect to the fare which they are obliged to take up with along with rural life among the farmers.

I have had several months of city life lately, but the country seems likely to become my permanent home, and that speedily—whereof I am glad. So I may speak freely of the shortcomings of country housekeepers and householders, as one who may be included somehow in the general castigation.

A friend writes to me in a private letter: "I do think that there is a deal of missionary work to be done among farmers' wives. I was sometimes vexed with the family where I boarded to see how every drop of cream was converted into butter and heavy lard pie-crust set before us; while cracked wheat, graham meal, and oatmeal were unheard of. I felt like exclaiming that 'good farmer's fare' was the most indigestible in the world. The inevitable *pig* occupies so prominent a place in their household economy that I was tempted to wish that a hog-plague would sweep through the country."

So large a proportion of those who flee from the city during summer are in pursuit of healthier conditions of living that it seems as though it would be the fair and Christian course for us who have any of them to entertain to give some study to the subject of the preservation of health by natural means. First the air. There is plenty of pure, life-giving oxygen out-of-doors, but the air of many country houses is constantly foul and poisonous. I say that which I do know. The windows are opened to ventilate the dwelling, perhaps; but ignorance has done its best in many cases to make a supply of pure air in-doors, even in the breezy summer time, literally impossible until great changes are effected. On one side there is perhaps a big horse barn and cattle shed, with piles of fermenting manure. On another side is a row of foul pig-pens; on another the slops from the kitchen and pantry are thrown out to decay and ferment and send up their fetid gases; under the floor of the dwelling is the unclean cellar perhaps, where very likely there is no such provision for ventilation as allows a fresh breeze to sweep through it, and where, possibly, some of last year's vegetables are going to decay. Then there is perhaps an open, unshaded "out-house," neglected and disgusting. So it seems hardly possible for the dear, good winds of heaven to blow toward the house from any quarter without bringing deadly poison along with them. There is no disagreement among scientific men, including all educated physicians, as to the fact of the poisonous nature of all these foul odors that arise from decaying animal and vegetable matter.

Do you ask what shall be done with refuse matter? Our wise Creator is trying to teach us the folly of all waste, and that everything is good in its place. The manure from which the early Dutch farmers of New York used to move their barns away and leave behind as useless, is now prized and cared for as of great value to make the land give forth its crops. We can not longer afford the deep vaults as receptacles of human excrement; we can not afford to pollute our rivers of water with it by means of sewers. A little pulverized dry earth scattered in mercy over each addition to this kind of "refuse" or "waste" matter turns all its apparent foulness into treasure for the farmer, fruit-grower, and florist. The kitchen slops poured into a compost heap and properly worked and mixed with soil save the premises from evil and yield their blessing to the garden and the field.

DIFFICULTY WITH GRAHAM GEMS.—Ought I to "fuss" a little? Well, do you know?—I *couldn't* make a graham gem fit to eat for weeks and weeks last summer! Actually, I got to thinking that graham gems must be a humbug, for I tried every way, and nobody would eat my gems if they could get any other bread. I did not hanker for them myself.

There came an article in HEARTH AND HOME, beginning with the question: "Did anybody ever see any of those wonderful graham gems, made only of flour and water, which are said to be perfectly light and sweet, 'perfect puffs,' etc.?" This article harmonized with the mood into which I had fallen, and despite all my happy experience of years gone by, I began to read it aloud in a triumphant tone to my husband, who had not ceased to sigh for "*good* graham gems."

I looked up after reading a little way, and met such a look of astonishment (at my tone and manner I suppose) that I laid down the paper to hear the grave remark: "But we have had graham gems made only with flour and water that were deliciously sweet, perfectly light, and sufficiently tender, and you have made them many a time."

So I had. I was sure of it at that moment. I remembered how I had time and again myself broken open a fresh gem (by the way, they should always be broken and never cut open when warm—the same of all warm bread) with the remark, "Now, if that is not light, I don't see how bread can be light"—alluding to a positive declaration made by one of the wise men of the deceased "Farmers' Club" that unleavened graham bread "could not be made light."

Well, I tried again, asking first to have the stove-pipe lengthened above the roof of the woodshed or summer kitchen where it stood. I had to wait a long time for the oven to get decidedly hot, and Pater had almost finished his breakfast before I could give him a hot gem; but that morning the gems were a success—for the first time in more than three months. We had lovely white yeast bread upon the table that morning, made of the "gilt-edged" or patent flour—exquisitely white, but said to contain a large proportion of the nutritious canaille or middlings. (Will the "humbug man" of the *Agriculturist* please inform us whether this "patent flour" could be classed under the head of "sundry humbugs.") Every one at the table preferred the gems to the much beloved white bread, and that day baby called only for "good gem" when she was hungry for dinner or supper.

The great mistake that I had been making all that time was in not having my oven hot enough when the gems were put into it. The chief secret of making "perfect puffs" lies in having the oven so hot that a skin or crust is very quickly formed, and this confines the expanding air and water as the inside of the gem grows hot, so that the gem comes out of the oven, if the batter has been well stirred and well baked, all full of fine air-holes.

A great many people can not believe that these simple flour and water gems can be really as good as those mixed with sour milk and soda, or with baking-powder, and salted and sweetened. I tried them with baking-powder and sugar, and with yeast, butter, and sugar, but we all do honestly prefer the genuine flour and water gems now that I have regained the secret of making them. New milk is better than water for mixing if you can get it. I have been no more pleased than surprised to find that my children, having grown accustomed to forms of food that were sweet, because they had not been deprived of the natural sweetness of their materials in the processes of preparation for the table, prefer these simply cooked and plainly seasoned dishes to what is called richer food.

It takes a careful cook, who understands the science somewhat, to make plain food palatable. If Bridget leaves the sugar out of your gems or johnny-cake she will probably try to atone for its absence by an extra allowance of salt—something to give the bread a taste you know! As though God forgot that when he contrived the wonderful wheat kernel! But it requires a refined taste, perhaps, to appreciate the peculiar sweetness and delicate flavor of well-cooked wheat.

Chocolate Cake.—Mrs. E. G. B.—Butter, ½ tea-cupful; sugar, 2 tea-cupfuls; flour, 3 tea-cupfuls; milk, 1 tea-cupful; eggs, 4; baking-powder, 1 tea-spoonful. Bake as jelly cake, and put between the layers the following mixture: Into one pint of boiling milk stir one tea-cupful each of grated chocolate and sugar and one table-spoonful of corn-starch. Boil until it forms a smooth paste. In boiling milk, always set the pan with the milk into another vessel containing water, and thus remove all danger of burning.

Corn-Starch Cake.—Mrs. E. G. B.—Sugar, 1½ tea-cupful; flour, 1½ tea-cupful; butter, ½ tea-cupful; corn-starch, ½ tea-cupful; milk, ½ tea-cupful; six eggs, whites only; baking-powder, 1 tea-spoonful. Flavor to taste.

BOYS & GIRLS' COLUMNS.

The Doctor's Talks.

Do you recollect that Mother Goose verse,

Mary, Mary, quite contrary,
How does your garden grow?

It is not the finest specimen of a rhyme, as to make it jingle properly you have to say con-*tra*-ry, which is *con*-trary to the rules of pronunciation. Perhaps instead of asking Mary, or any other youngster, boy or girl, how her or his garden grows, I had better find out if she or he has a garden. Have *you* a garden? If not, go to work right off and make one. You will think that a very difficult thing to do, especially those girls and boys who live in towns and villages where land, one of the very first things one needs in making a garden, is very scarce. The word garden covers a wide range, as a garden may be of many acres, only a few feet of a back-yard, or an old soap or similar box filled with earth. In fact, it often happens that the one who has the smallest of these gardens finds more enjoyment in it than those who have very large ones. "Enjoyment" is just what I wish you to have a garden for, and I hope that every boy and girl old enough to read this will this summer have a garden, if it is only just one plant, and that a bean or one of the very commonest seeds. If any of you have never put seeds in the ground and seen plants grow, here is something you can do that will give you pleasure all summer long. Not pleasure only, but you can learn much from a garden, even if it is only a very little one in a box or a pot. The crackling sound when you stroke the cat's back on a cold, dry day in winter is only thunder on a very small scale; the little snaps are from the same cause which follow the same laws as that which makes the stunning thunder-clap. A twenty-acre field of wheat is made up of single wheat plants, and if you sow a single wheat grain and watch it from the seed until the plant that comes from it ripens wheat again, you can learn as much about the way in which wheat grows as if you had a large field to observe. Indeed, you would be likely to learn more, as having but one plant to watch you would have a better chance to see what it was doing than if it were crowded by others. If you can get a small bed in the large garden of your parents that will be very pleasant; but if this not convenient you may be able to find a little spot in some fence-corner somewhere. Those who live on a farm will usually be able to do one or the other of these. Those who can not get a bit of earth in any other way can have a box in some safe place, only a box of earth will often need watering in hot weather. Having the earth, it must be made light and fine by digging and raking, and then it will be ready for the seeds.—"What seeds shall I sow?" you will ask next; and my answer will be, What you can get. If your mother finds that you wish to have a little garden, you may take my word for it that she will be very glad to help you, and if she has no flower seeds there are no doubt some friends who have will be willing to let you have some. I have noticed that persons who are really fond of flowers are not only willing, but glad to help others who love them. If there are no flower seeds, then take some beans, or squash, or any garden or field plant. Only have something that will grow, and that you can watch from day to day. Don't put your seeds too deep, nor too thick. Small seeds need but very little earth as a covering, and no plants do well when they are crowded. You must ask some older person to tell you how the seeds ought to be sown. A seed—did you ever see anything more wonderful? A little, dry, lifeless body that has been lying still for months, it may be for years. You put it in the ground, and what a wonderful change! A living plant comes from it, that will grow often many feet in length. I don't mean to say that the plant was in the seed, but the beginning of it was—a tiny, baby plant, so to speak, all wrapped up, very much asleep, you will think, to have kept quiet so long, and with enough food with it to keep it growing until it is strong enough and quite ready to run alone. Suppose that all plants had heretofore grown from cuttings or slips of other plants, just as you know some do, and some one should come along with a bag of seed, we will say tomato seed, and declare that each one of these little yellowish things, no bigger than a flattened out pin's head, would produce a large plant that would bear a bushel of fruit, who would believe him? Why, each single seed would be a greater wonder than Barnum's "Great Moral Show." But, oh dear! God's wonders are so manifold, that we all of us, old and young, have our senses confused by their very abundance. As with the seed, the whole of a plant's life is full of wonders, and if you watch your plants carefully you will see every day some new thing. If you have Morning Glories or other climbing plants, just see how they get hold of something to lift up their weak stems; if they twine, like a Morning Glory, just try to make one of them twine in the opposite way, and see what success you will have. Each leaf as it appears will be a thing of beauty, and then there will be flowers, bright delicate flowers for you to admire. But before the flowers open there will be something to see that is quite as interesting as anything else about them. You must notice, with the single flowers at least, how nicely the parts are packed away in the bud. The parts of the flower are not stowed away all in "a muss," but each as carefully folded as your mother folds her choicest linen. Just see how nicely the Morning-Glory is packed, and how prettily it is twisted, and compare this with the way in which the flower of the Four-o'-clock and others are tucked in. Then, as flowers go, seeds will begin to ripen. You will notice that the seeds are in pods or cases of different shapes, and that some of them when ripe open to let the seeds out. The different ways of doing this will bear watching, and if you wish to save any seeds yourself you must learn which plants scatter their seeds naturally and which do not. But I can not tell you all that there is to see in your garden, no matter how small it may be. You have eyes—learn to use them.

THE DOCTOR.

Another Currant Question.

In February last I, the Doctor, answered a little girl's question, who wished to know what the dried currants of the stores were. Now it is Miss Amy, down in Nova Scotia, who wishes to know why our garden currants, which do not come from Corinth at all, are called currants. Don't I wish I could tell her! It is probably because of a resemblance of the two in size and shape (when the store currants are fresh), but I am not sure. I can not find in my library any book that tells when and why the name was given. My oldest book about plants is dated 1640, and they were called *currans* then; but the author says that in some parts of England the currant is called *gozel*, which sounds like an Anglo-Saxon name. If we wished to know why the early inhabitants of Britain called the fruit "gozel" we should be equally puzzled. The study of names is a very interesting one, and I like to see young people wish to know all they can about them. We can learn much about the origin of names, but however far back a name may be traced, there is a point beyond which we can not go. We can learn that most of the words we now use were originally Anglo-Saxon, or from the Latin, French, and other languages, but why the names in these languages were given to particular things is not so easy to discover. The use of sounds to signify things began long before these sounds were expressed in writing, and the early history of language is very obscure. I hope the Nova Scotia Miss will get a more satisfactory answer to her next question, and should she find out anything more about this one I hope she will let us all know.

Aunt Sue's Puzzle-Box.

ANAGRAMS.

1. Farce hunter.
2. La! "monkies."
3. I go, Miss Mat.
4. Can not live on.
5. Secure tin.
5. Buy oval car.
7. I'm in coal-pit.
8. Rebel's ague.
9. Aunt, oil dice.
10. Our thought.

SYNCOPATION.

Syncopate a substantive and leave a verb; syncopate the verb and leave another; syncopate that and leave a proposition; syncopate that and leave a beverage.

JESSIE MAY FLOWER.

CROSS-WORDS.

1. My first is in hot but not in burn.
   My next is in cream but not in churn.
   My third is in new but not in old.
   My fourth is in snow but not in cold.
   My fifth is in hair but not in curl.
   My sixth is in peach but not in pearl.
   My whole is the name of a little girl.

C. E. GORTON.

2. My first is in cord but not in twine.
   My next is in groan but not in whine.
   My third is in Tom but not in Bill.
   My fourth is in valley but not in hill.
   My fifth is in Nell but not in Sue.
   My sixth is in brown but not in blue.
   My seventh is in good but not in bad.
   My eighth is in you but not in lad.
   My ninth is in square but not in round.
   My whole in a library should be found.

LIZZIE B.

PI.

"Het nows-stirfd, chiwh vach nail os goln,
Gintnahu het dendhi konos,
Keil lyguti htsogs evah lipedps wyaa,
Seunen, tino het korobs."

WILLIAM P. ALBRIGHT.

CONCEALED GEOGRAPHICAL NAMES.

1. Oh! do not leave me, as I am all alone!
2. Alas! Kate, my darling, I must go.
3. Pa ran a horse all the way to the Saint Francis.
4. When he returned from the San Franc, I scolded him so that he begged for mercy.
5. Although he said, "Oh! I ought to have known better."

C. W. SHELMIRE.

SQUARE-WORDS.

Square the words "LOVE" and "HATE."

CHARLEY SMITH.

ALPHABETICAL ARITHMETIC.

WKI)DIOCYB(KKIE
EDO

DSC
EDO

CEY
IOK

BEB
BWS

KB

FRANK POWERS.

No. 439. *Illustrated Rebus*—also a Double Acrostic.—[This is one Aunt Sue sent a long time ago, and it has been crowded out until now; so if we have not given the right name to it you must not blame her. When the parts of the rebus are properly made out, the first and the last letters of each, read as an acrostic, will be the name of something you are no doubt all very fond of.—ED.]

ANSWERS TO PUZZLES IN THE MARCH NUMBER.

DECAPITATIONS AND CURTAILMENTS.—1. Gape, ape. 2. Grouse, rouse. 3. Homer, omer. 4. Sage, sag. 5. Heron, hero. 6. Beet, bee.

CROSS-WORD.—Rheumatism.

SQUARE-WORD.

PARIS
ASIDE
RISEN
IDEAS
SENSE

NUMERICAL ENIGMA.—Thread (Hatred, Red hat [the Cardinal's], Dearth).

ARITHMOREMS.—1. Hold. 2. Folio. 3. Attentive. 4. Ivory. 5. Going. 6. Option. 7. Nook. 8. Poise.

ALPHABETICAL ARITHMETIC.—
292)1240406(4278 (*Key:* Hysterical.)

GEOGRAPHICAL HOUR-GLASS.—Meshickemau.

BABELMANDEL
WORCESTER
PAISLEY
SIHON
AIX
C
OKA
ONEGA
MARMORA
SAGHARBOR
ALBUQUERQUE

PI.—A word once spoken can not be brought back by a coach and four.

AUNT SUE'S NOTICES TO CORRESPONDENTS.

BELLA C. E.—To "find out an anagram," print the letters on a piece of card, then cut them apart and rearrange them into the original word. For instance, here is an anagram—"DO, PAT." Now print upon a strip of card (or paper) "D O P A T"; cut each letter separate, and twist them about until you have the original word, which is "ADOPT." The method of making or "finding out square-words" I described very thoroughly in the May number of the *Agriculturist*, 1871.

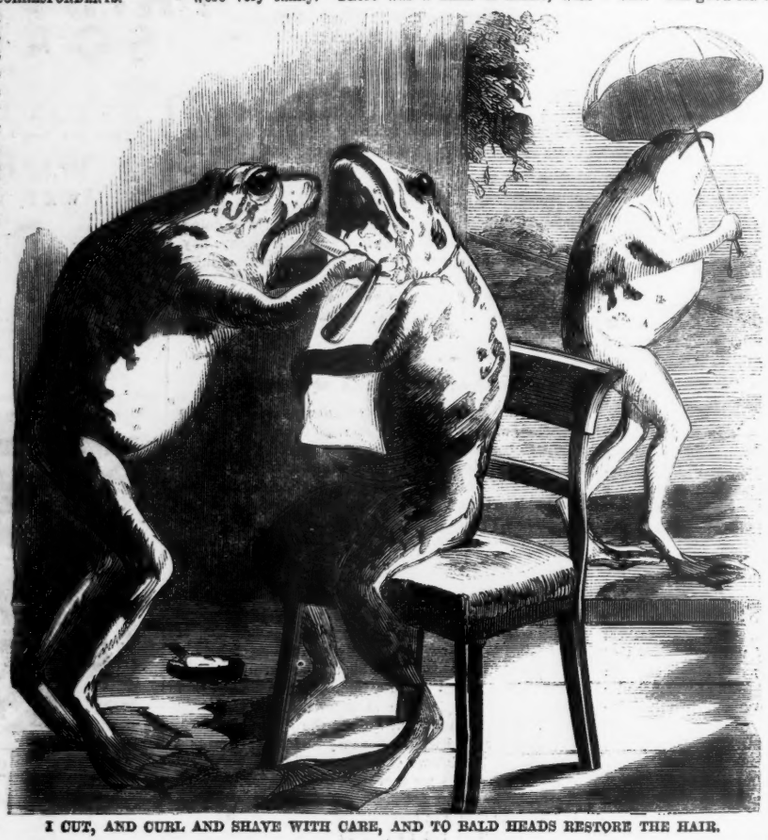
BESSIE BENNETT.—Very heartily do I exclaim "God speed!" to the women who engage in good works; but in the matter you speak of I dread reaction.

Thanks, for letters, puzzles, etc., to E. S. R., Jere P., F. S., Bessie Bennett, J. B. K., Robt. F. J., B. C. E., Minnie F. D., and W. H. S. F.

All communications for the PUZZLE-BOX should be addressed to "AUNT SUE," P. O. Box 111, Brooklyn, N.Y. [and *not* ever to the office of the *Agriculturist*.—ED.]

An Impersonation.

"An Impersonation: what is that?" you will say. The picture is an impersonation. Now, don't be in a hurry and think that impersonation is another name for frogs. To impersonate is to give an animal or other thing the qualities of a person. In the picture frogs are made to appear as persons, and being represented as doing as persons do, they look exceedingly ridiculous. It is just for the ridiculousness of it, the fun of the thing, that we give this picture; for we think it well to have once in a while a nonsense picture with those of a different kind. We do not know but are very sure that this picture was drawn by a French artist. The French have a great fancy for these impersonations, and some of their artists are wonderfully skillful at making them. We have seen a large French book, called "Another World," in which the writer pretends that in some mysterious way he went to some planet where beasts, birds, and insects were the only inhabitants, and there carried on all the business and various operations that men and women do in this world. You may imagine that the pictures were very funny. There was a band of music, with crickets and all the noisy insects playing away for dear life. A quack doctor, represented by a duck with his patient, very properly a goose, and all sorts of amusing things. Frogs are especially suited to this kind of impersonation, and in the picture the obsequiousness of the barber and the patience of his sitter are very cleverly done; and we must not forget to notice the satisfaction with which the one who has had his "shave" takes his sun-umbrella, and walks off to pleasure or business.



I CUT, AND CURL AND SHAVE WITH CARE, AND TO BALD HEADS RESTORE THE HAIR.

Making an Acquaintance.

We like those boys on the fence, especially the oldest one. The good old cow has a calf, and instead of bouncing roughly into the presence of the frightened little stranger, they make their approach quietly, and one of them brings a gift of welcome in his hand, with the hope of forming an acquaintance. Is there anything more awkward and, so to speak, unreasonable, than a young calf? It has no beauty in its early days and is exceedingly obstinate and stupid. It seems to know just one thing: that its mother's milk is its own property, and there is just one right and proper way for it to get it, and it takes a great deal of teaching and requires great patience in the teacher to make it drink milk. It is not likely that the calf will eat the apple that the boy has brought, but it shows that the youngster knows what every boy and girl ought to know, that the way to treat all animals is to make friends with them from the beginning. The little calf does not meet the boys' advances now, though the mother does in her looks seem to try to encourage it; but it will soon, and before long will be glad to have the boys pet it. Did you ever notice the difference between colts that had been petted from the first and those that had been "shooed" at just to see them kick up their heels and scamper across the pasture? We have seen colts not a year old that would come from any part of a large lot when called, and seem to enjoy a little petting and coaxing as much as a boy enjoys approving words from his father or mother. When colts and calves hear only pleasant tones, when they are taught, as they soon may be, to look upon us as their friends, there will be little need of what is called "breaking" of horses or steers; having been always treated kindly, they may be taught without trouble to do what is required of them. Animals that have become attached to you by kindness appear to really wish to please you if they only know what you want them to do. They are slow in finding this out, and need a great deal of patient showing. When they once understand they will gladly obey.

MAKING AN ACQUAINTANCE.

Life Insurance.

HOW to get money, or to keep it, is by no means the most difficult or desirable of accomplishments. It requires but a very ordinary ability; and if that ability is not accompanied by other qualities of a higher order, its possession is not to be greatly coveted. But one thing it does require, without which no ability can succeed, and that is—*money*. A fortune can no more be acquired without some capital to start with, than a crop of corn can be raised without corn to plant. The plowing and cultivating may be done ever so diligently and well, but without the seed there can be no crop.

That "first thousand dollars" necessary to a successful embarkation after the golden fleece must first be obtained, or the ambitious argonaut sets his sails and launches his ship in vain. Thousands and tens of thousands have essayed the voyage without it, only to meet with certain shipwreck of fortune or character, or of both. In the effort to get that "first thousand dollars" what years of weary toil and care must usually be expended.

The number is almost incalculable of those who, having the power of success, lack the means; and whose lives, that might yield a rich revenue of good, are spent in comparatively profitless drudgery, delving after that "first thousand dollars," the possession of which is to be the corner-stone of future fortune.

There is but one way for the poor man to save his children from this slavery, and that is by leaving them the little legacy which delivers from the necessity that has been laid upon him, and puts them on the high road to success, if the elements of success be in them. To do this in a single sum, by a single saving, is impossible; but to do it by many savings of many sums is possible, if life is spared him until the end is attained.

But, if life is not spared, what then? Why, for his children, the same dreary, hopeless life which he has endured.

From this the United States Life Insurance Company, of this city, eminent among the best of such institutions for its safety, economy, and liberality, furnishes a ready deliverance. It furnishes to every man the way of purchasing for his little ones that golden key which unlocks the door of opportunity—that "start in life" which wins the race—that "first thousand dollars," which is the fulcrum resting upon which, with the leverage of faith and industry and honesty, the world itself may be moved.

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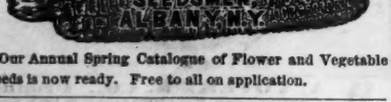

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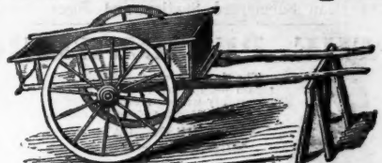

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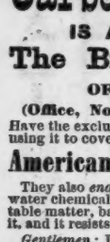

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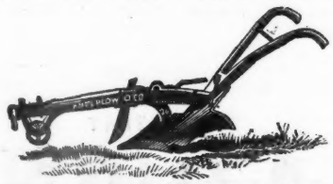

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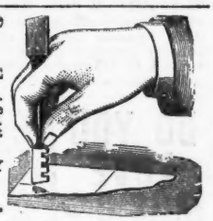

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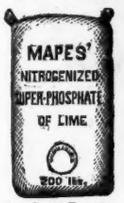

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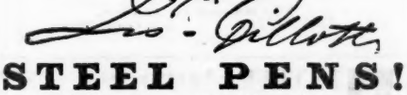

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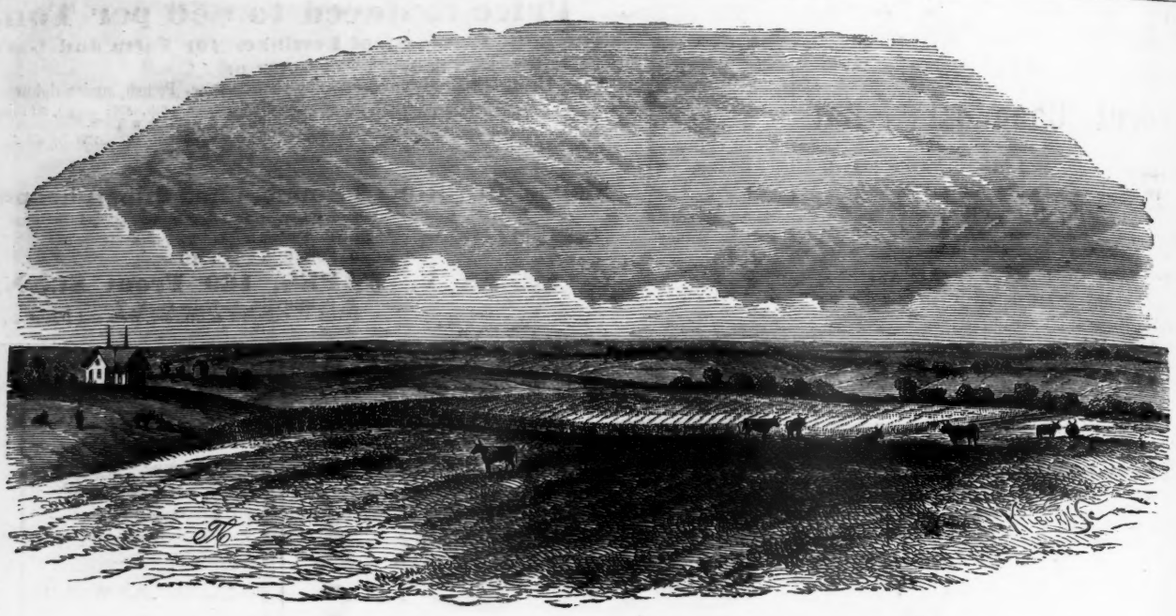

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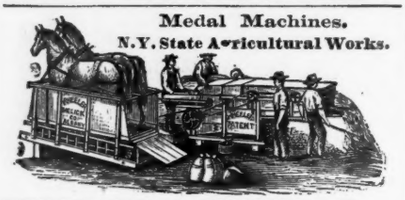

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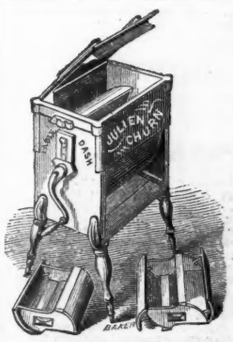

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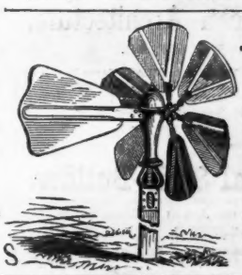

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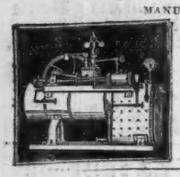

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